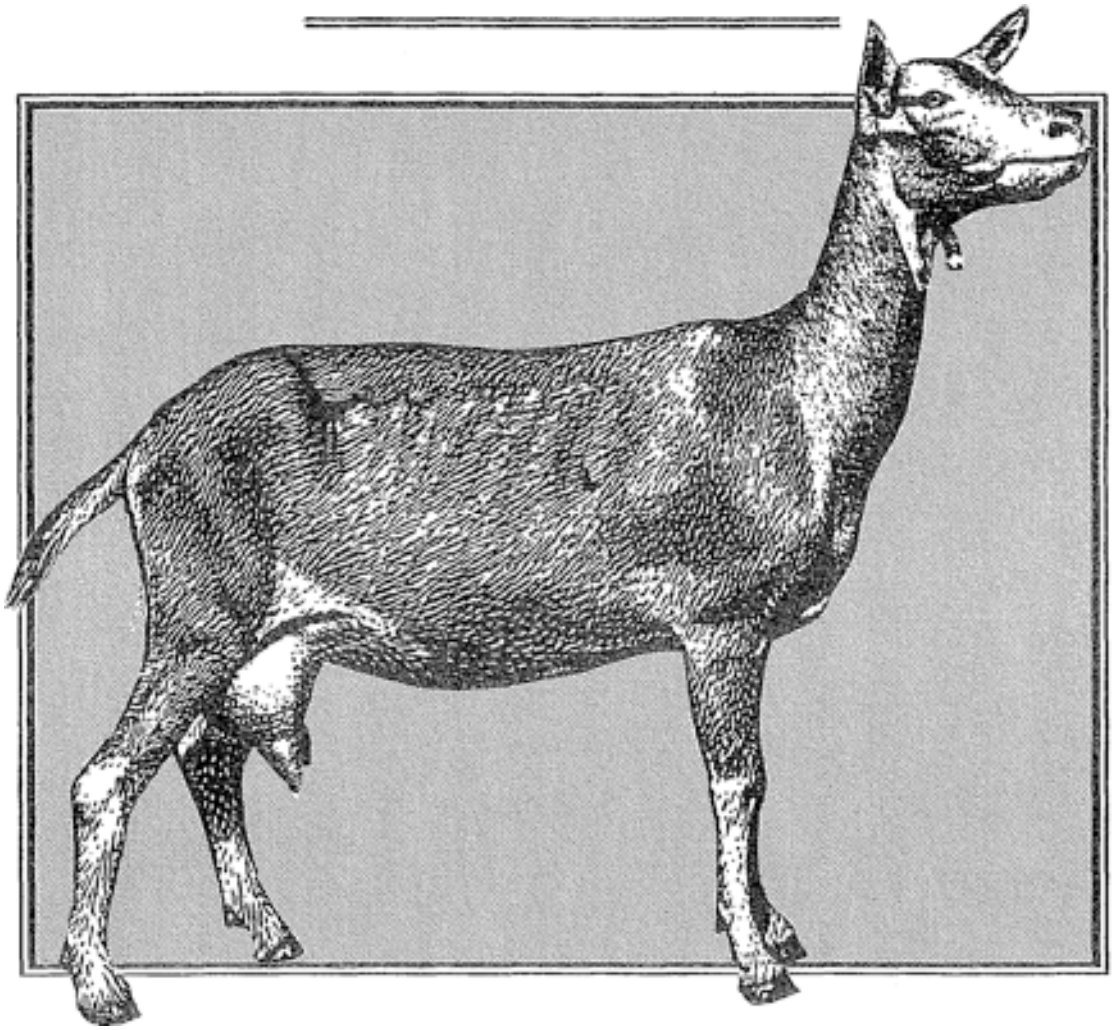
2013 UPDATE

Proceedings of

The Second Missouri Goat Producers' Marketing Conference



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Proceedings of the Second
Missouri Goat Producers' Marketing Conference

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Preface

In the decades of the eighties and nineties, we witnessed a significant increase in demand for goats and goat meat in the United States. Two factors have been identified as the reasons for this growth. First, there is an increase in the number of immigrants coming to the United States from other countries, where goats provide staple meat. For example, the number of legal immigrants has grown from 51,000 to approximately 62,000 since 1991. Immigrants who enter the United States (US) illegally are currently estimated at between 1.9 and 5.6 million annually. These individuals would buy goats and goat meat regardless of cost. Second, the preference for goat meat is constantly growing. A few years ago, a very large percentage of US born citizens did not eat goat meat. Recently, the percentage of those who eat goat meat is steadily increasing. In other words, goat meat is gaining acceptance among those who disliked it before. The relatively young health-conscious community now eats goat meat because of its desirable attributes, low in cholesterol and fat.

The conference where the contents of this book were presented was organized to help goat producers understand the broad implications of the surge in demand in the goat industry. Among other things, it was also designed to introduce them exiting technologically improved marketing strategies as well as the conventional techniques. Producers were encouraged to take advantage of the opportunities we have in the goat industry, especially the increase in price resulting from the increase in demand, faced by an apparent constant supply. The concern of these individuals is not just the rate of return to their labor, but also the total income they can garner from a relatively small farm, since most goat producers are small farmers. Valuation of the economic performance of a farm centers on its ability to offer an adequate return per unit of resource utilized. In the long run, these returns should be comparable to those that can be earned in alternative uses.

The abridged and main goal of the Lincoln University Cooperative Extension (LUCE) is to serve the small and limited resource farmers, elevating them from economic poverty to enhanced quality of life. Goat producers in Missouri fall into this category of farmers, and LUCE has determined to do all it can to make their experiences in goat production rewarding. On May 8, 1999, approximately 36 producers gathered for the Second Missouri Goat Marketing Conference at the Ramada Inn in Jefferson City, Missouri to discuss issues that are pertinent to the goat industry. These included goat marketing and economics; breed, live evaluations and grade standards of meat goats; goat production and nutrition; and goat meat acceptance. In addition to the educational objective of the conference, it also provided a forum for networking among producers. They shared views on what works for them in their operations. For future conferences, producers will play a very significant role in determining areas of concern that need to be addressed. We sincerely hope that these proceedings will become useful to you as you develop your existing operation or begin a new one.

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Economist/State Marketing Specialist
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Acknowledgments

It is always the case that no conference can be successful without the sacrificial input of many deserving individuals. We owe thanks to the Lincoln University Cooperative Extension (LUCE) faculty and staff for their encouragement. Special thanks go to Dr. Dyremple Marsh (who was at the time of this conference the Interim Director of LUCE, and became the Associate Director of the Unit) for his support and insightful comments. The remarks and comments by Dr. Marsh created positive impressions in the minds of attendees as to the willingness of the LUCE to assist in the overall development of our clientele.

Much gratitude goes to Virginia Neil for all the effort she put into the organization of the conference, sending out letters of invitation and making name tags. Gladys Grove and Klare Ly deserve special thanks for agreeing at the last minute to work at the registration desk on the day of the conference, and to Gladys Grove again for being the mistress of ceremony for the conference. .

For the preparation of this manuscript, we owe great thanks to Virginia Neil and Troy Darden. Much thanks goes to the Lincoln University Printing Services for their dedication to quality work. We would like to thank the Missouri Goat Marketing Committee and their Chairman, Charles Reed, for their commitment to the success of the goat industry in Missouri through different niche marketing techniques, especially the Internet or electronic goat auction. Many thanks to Joyce Crouch and Gladys Gaeke for being the pioneers in the coordination of the goat marketing conference processes.

Missouri Pooled Goat Sales

Charles Reed

Farmer and Chairman

Missouri Goat Marketing Committee

Procedures and Guidelines for
Consigning and Selling Goats on the Internet

General Description:

Pooled goat sales are organized by the Missouri Goat Marketing Committee and conducted by Equity Cooperative Livestock Sales Association of Baraboo (Equity), Wisconsin. In order to hold a sale we must be able to offer a truckload or 500 to 600 market goats. The Marketing Committee will work with interested producers to establish sale dates and delivery points that accomplish this. Individual producers will consign their animals with Equity, who will pool them and offer them to buyers through their Internet based electronic auction. Producers will deliver their animals to local delivery where they will be sorted, graded, weighed and loaded onto the buyer's truck. Equity will pay the seller based on weight and grades delivered.

What to Sell:

This is a terminal (slaughter) market. We do not sell breeding stock at these sales. We can sell all types and weight classes of goats, however the top prices are for meat type goats in the 50 to 100 lb. range. We do not sell goats which are under 35 lbs., sick, injured, deformed, or goats presented in violation of drug withdrawal periods.

Types and Classes:

The following types and classes will be used to describe your goats to equity and the buyer, by equity and the buyer to determine price differentials, and by the grader at delivery.

Types: These breed types will be used to describe the general body type and conformation.

1. Dairy: Includes Alpine, Nubian, etc.
2. Meat Type: Includes Boer, Spanish, Kiko, Tennessee, and most resulting crosses.
3. Angora Type: Angora and curly haired Angora Crosses.

Classes: These classes will be used within each type to describe the general weight and age.

1. Kids 35 to 50 lb.
2. Kids 50 to 70 lb.
3. Kids over 70 lb.
4. Muttons 70 to 100 lb.
5. Muttons over 100 lb.
6. Culls

These definitions of terms will be used: Kids – Males (castrated or not) and Females under 1 year of age (baby teeth). Muttons – Yearling (two tooth) Wethers and Does. Culls – Bucks and Does not included as kids or Muttons. Rejects – goats that are weak, sick, injured, weigh under 35 lbs., carry drug residues or are otherwise unfit to ship. These will be sent back with the owner. All types and classes may not be represented at each sale. The price differentials will be established by Equity and will be available from them prior to delivery. At any given sale there may not be a differential between some types and/or classes.

Consigning

To consign goats call Equity at 1-800-362-3989. Dave Johnson is in charge of goat marketing. Equity will need to know your name, address, phone number and the number of each type and class of goat that you are consigning. Tentative sale dates will be established by the Committee based on survey responses and will be sent to those that responded to the survey. Equity will also have a list of possible dates. Remember we need 500 to 600 goats to make a sale.

Selling

Sales will be conducted by Equity on Thursday using their live Internet system at http://www.equitycoop.com. Call Equity on the Friday following the sale for sale results. At that time you will have an opportunity to accept or reject the sale of your stock.

Delivery

Delivery will be at 10:00 a.m. on the Tuesday following the sale. Delivery locations will be set up prior to the sale. The Committee will provide a grader at each delivery site to type, classify and weigh the goats as they are delivered. Decisions of the grader will be final and take precedence over any statement made prior to delivery. Prices for each type and class will be posted at the delivery site. The grader will promptly transmit delivery data to Equity.

Payment

Equity Livestock is a licensed and bonded sales agent and will cut checks to the sellers as soon as delivery information is received (usually the next day). A per head commission will be deducted from the seller's check. In the past this has been $2.00 per head, but that may change. The commission will be set prior to each sale.

Quality Considerations

- Avoid bruises and stress by handling goats gently and quietly.
- Avoid carcass blemishes by giving shots sub-Q in the neck.
- Avoid drug residues by following all prescribed withdrawal periods. All drugs, including dewormers and coccidiostats, have a required withdrawal period before

slaughter. If the drug is labeled for goats the period will be on the label. If it is extra label, obtain the withdrawal from your Vet.

- Goats are not sheep, they do not “finish” nor do they marble. Fat on a goat is waste to the packer and considered a quality defect.

Breeds, Live Evaluation and Grade Standards of Meat Goats

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INTRODUCTION

Accurate evaluation of the breeding or market value of livestock and livestock products is essential to the economic success of any livestock or meat industry enterprise. In market animal evaluation, the feeder must be flexible in his preference of feeder types and be willing to change with the market or feeding situation demands. He must be able to recognize an animal's performance potential and select those feeders which will be most efficient and profitable for the given situation. The feeder, as well as the livestock buyer, must also be able to determine the value of the slaughter animal. This involves knowledge of the animal's weight, body composition and estimated carcass quality, plus an understanding of the market conditions and trends.

The animal breeder must make decisions s to which animals are to be kept or culled from the herd or flock and which animals should be chosen as replacements. The breeder must be able to combine "eyeball" or subjective evaluation with the more objective methods of evaluation (performance testing, production records, linear measurements, determinants of body composition, etc.) to determine which seed stock should be incorporated into the selection program.

There are well-defined and widely used grade standards for cattle, swine, and sheep in use today. These grades provide a "common language" between producers, marketers and end users to facilitate the transition of ownership from the farm, to the market, to the consumer. The understanding of grade standards by all parties and the accurate application of these grades provide the foundation to livestock marketing in the United States. Currently, the

meat goat industry in United States does not have n established and understandable description to relate live goats to slaughter vale. An important step in the process of establishing and maintaining a viable meat goat industry is the development and implementation of uniform standards that will accurately describe a live slaughter goat and correlate this description to a predictable type of carcass.
A complete understanding of the factors that affect carcass quality and yield grade is essential to every producer, feeder, buyer, and consumer of livestock and meat. Producers, feeders and buyers must become proficient at visual or subjective evaluation; yet continue to incorporate objective tools and aids into their selection programs to improve the accuracy of their evaluations.

ORIGIN OF THE GOAT

There is evidence that goats were among the first animals to be domesticated by humans, perhaps as long as 10,000 years ago or more. Goats have been domesticated at least as long as any domestic animal. There is some evidence that nomadic people of the Middle East tended goat herds as early as ten thousand years before Christ.

Wild goats originated in Persia and Asia Minor (Capra aegagrus) and the Himalayas (Capra faconeri). There were domesticated goats (Capra hircus) in Switzerland by the Early Stone Age. The first goat registry in the world was started in Switzerland in the 1600s.

Goats are the Phylum Mammalia which means that the young suckle on a secretion from the mammary glands. They are of the Order Artiodactyla, i.e. they are even-toed, hoofed animals. They belong to the Family Bovidae, which, among other things, means they are ruminants and have hollow horns. They belong to the Genus Capra.

GOAT BREEDS

There are 102 got breeds and types, and large number of mixed goats in the world today ranging in weight from 20 to 40 lbs. for the small tropical breeds, to over 200 lbs. for the large European and Boer breeds. This diverse genetic resource can provide a rapid method for improving traits of economic importance in goats. Most of the purebred animals arrived in the United States in very small importation in the twentieth century. Today, there are five major purebred breeds in the United States (Nubian, Alpine, La Mancha, Toggenburg, and Saanen) and there is a registration system used whereby bucks which are 15/16 purebred and does which are 7/8 purebred can be registered as “American”. Besides the major breeds, the Oberhasli, Pygmy Angora, Spanish, Boer and Tennessee Stiff-legged goats are also found in the USA. Generally, these goats are classified as dairy, meat or wool (fiber) breeds. A short description of each breed is given below.

Dairy Breeds

The Alpine: (French Alpine, British Alpine, Rock Alpine) The Alpines originated in the Alps Mountains of Switzerland. All of the animals in the United States trace their ancestry back to an importation of 21 animals in 1922. They are excellent producers of good quality milk and average about 2000 lb. of milk and 3% butterfat in 10 months of lactation. Alpines are relatively large animals with erect ears. Alpines come in many combinations of white, black and brown in characteristically named color patterns. Some are con blanc (French for white neck). The white neck and shoulders shade through silver gray to a glossy black on the hindquarters. Another color pattern, the chamoisee, can be tan, red, bay, or brown, with black markings on the head. The sundgau has black and white markings on the face and underneath the body. The pied is spotted or mottled; the cou clair has tan to white front quarters shading to gray with black hindquarter. The cou noir has black front quarters and white hindquarters.

The La Mancha: The LaManchas are a relatively new breed of dairy goats developed in the United States. The first animals were registered in 1958. Breeders in California crossed goats of the Spanish origin with pure breeds of the Swiss origin. The distinguishing

characteristic of the La Mancha is their small rudimentary ears, which are genetically dominant. Because good animals were used in the development of this breed, there are some excellent milking herds. They come in all colors and color patterns, and they have no really distinguishing characteristic other than their tiny ears.

The Oberhasli: These goats are actually Swiss Alpines and were developed near Bern, Switzerland. They are known by different names including Oberhasli-Brienzer, Swiss Alpines, Chamoisee and Brienz. The color pattern is usually rich red bay coat with black trim. The black includes stripes down the dace, the ears, a dorsal stripe, and the belly and the udders. The legs are also black below the knees and the hocks. They have erect ears and are very well adapted for high altitude mountain grazing and long hour marching.

The Saanen: The Saanen breed originated in the Saanen Valley of Switzerland and have enjoyed a wider distribution throughout the world than any other breed. They are the largest (size) dairy goat breed. They are by far the most popular breed in the state of Israel, many European countries, Australia and New Zealand. Theyare called the Holstein of the dairy goats because of their relatively high milk production, large size and the slightly lower butterfat content of their milk than the other dairy breeds.

The Toggenburg: The Toggenburg originated in the Toggenburg valley of Switzerland where they have been bred for hundreds of years. The Toggenburgs are the oldest registered breed of any animal, with a herd book having established in the 1600s. they occur in shades of brown with characteristic erect ears, white facial markings and white lower legs. Toggenburgs rank slightly behind Alpines and Saanen in milk production.

Meat Breeds or Types

The Boer Goat: The Boer goat was developed in South Africa from native goats found in southern and northern Africa, as well as some European and Indian goat breeds. Developed within the last fifty years, the Boer goat was selected for fast growth, enhanced

reproductive performance, conformational uniformity and adaptability to a wide range of environmental and production conditions. In terms of reproduction, the ovulation rate ranges from 1 to 4 eggs per cycle per doe, and kidding rate of 200% is normally possible. Mature weights range between 170 to 280 pounds for bucks and 110 to 165 pounds for does. The Boer goat can gain up to 0.50 pounds per day.

The Nubian: The Nubians are the most numerous breed in the United States. They were developed in England by crossing British dairy stock with Indian Jumnapuri nd Egyptian Zariby types. Outside the United States, they are known as the AngloNubians. Because they are short-haired, heat tolerant and have meatier carcasses than the Swiss breeds, they have been used extensively to upgrade native goats in the tropical countries. Nubian are distinguished by their long and wide pendular ears and Roman noses. They produce milk of good quality with relatively high butterfat content. They are found in many colors and color patterns and they have a shorter hair coat than the Swiss breeds. The Nubian is often compared with the Jersey cow. The average Nubian produces less milk than the average goat of any breed, but the butterfat content is high.

The Pygmy: These goats originated in West and Central Africa and are only 16-23 inches tall in the withers at maturity and does weigh only 55 pounds. They are very compct and well muscled. The frame is clearly defined and well angulated; limbs and head are short relative to body length. Full-barreled and well muscled, the body circumference in relation to height and weight is proportionally greater than that of other breeds. These goats are more likely than any other breed to have triplets, or even quadruplets. The Pygmy goats are hardy, alert, animated, good natured and gregarious. They are adaptable to humid tropics and re resistant to many diseases.

Spanish Goat: The Spanish or brush goats are kept in large number in the open range in the Southwest (mostly in the Edward’s Plateau of Texas). These goats are good mothers and are believed to be good meat goats. The recent importation of the Boer goat has resulted in utilizing the Spanish goat in many crossbreeding programs for meat production.

The Tennessee Stiff-legged Meat Goats: The Tennessee Meat Goats (TMG) are hardy, self-sufficient pasture animals that thrive on browse and require little, if any, supplemental feeding. They are seldom affected by illness or disease, except for a genetic condition known s Myotonia. Myotonia is a neuro-muscular condition (not necessarily a genetic defect) that causes transitory muscle stiffness of the hind legs and neck when the goat is startled. The stiffness generally lasts 10-15 seconds and is painless to the goat. The TMG are far easier to handle than Spanish goats, are easy to keep fenced, and the heavy muscling in their hindquarters causes them to carry much more meat than other breeds of goats, except probably the Boer Goat. Mature doe weights range from 85 to 165 pounds, and breeding bucks can attain weights up to 250 pounds. They have a kidding ratio of about 200% and can breed year round.

Fiber Breed

The Angora: Angora goats originated in the Near East. The Angora goat has a straight or concave nose, thin but short head, pendulous ears and twisted horns on both sexes. It is a small breed, usually white in color. Angora goats have a have a long outer coat (known as mohair) with a valuable fine underwool (cashmere). The top quality fleece of a purebred may weigh 6 – 10 lb. Spring molt is natural and just before it occurs, shearing is done. They are not very prolific and twinning is less frequent than most other goat breeds.

LIVE EVALUATION OF MARKET GOATS

There are several characteristics that we should look at when evaluating a live goat for slaughter purposes. These include conformation, general appearance, muscling and condition. These evaluation criteria are taken from Texas Agricultural Extension Publication No. B-5018

Conformation

Meat goats should be evaluated on “type” and “market desirability.” These terms refer to frame size, skeletal correctness and how these blend in the market animal. “Market desirability” concerns how much finish the goat has in relation to its weight, size and age and is sometimes referred to in terms of USDA quality and yield grades used for lambs.

A good market goat should be rectangular in appearance from the side with straight, level top and bottom lines. Length of rump, length of body and length of leg are important to market desirability. The rump should be level and the overall body should be trim. The legs should be straight and placed square under the body, not post-legged or cow-hocked. The fore and hind legs should show evidence of muscling.
From the front, a market goat should show width between the forelegs, muscling in the forearm and shoulders, trimness in the brisket or breast area and soundness and correctness in the front feet and legs. The head should be in proportion to the neck and body.

From the rear, the hindquarter should be muscular and long and the back, loin and rump should be uniform in width. The feet and legs should be straight and spaced square and wide under the goat.

General Appearance

Stature: the term stature refers to the overall skeletal size and length of the goat. Goats must have an adequate length of cannon bone from knee to pastern and should be above average in overall length of body and general size. Cannonbone length is a good indication of skeletal size. The goat’s height measured at the withers should be slightly more than at the hips, and bones must be of good size.

Head: the head should combine the beauty of eyes, nose ears and overall form with strength and refinement. It should have a balance of length, width and substance that insures an ability to consume large amounts of forage with ease.

Front End: The front end is a combination of chest and shoulder features. The goat should have a wide chest floor and prominent brisket with a smooth blending of shoulder blades and sharp withers. This insures room for the heart and lungs to do their work with ease and also is evidence of proper muscle and ligament strength.

Front Legs: The goat's front legs should be straight, perpendicular to the ground, sound in the knees and full at the pint of the elbow. The legs should move with the front feet pointing straight ahead.

Back: A back that is straight, strong, wide, long and level is desired in goats. This denotes a strong body build with good muscling and is indicative of strength to carry large quantities of feed.

Rump: The goat's rump should be long, wide and level from thurl to thurl, cleanly fleshed and have a slight slope from hips to pins. The shape of the rump is important as it affects leg set.

Hind Legs: The goat's rear legs should be wide apart and straight when viewed from the rear, with clean hocks and a good combination of bone refinement and strength. Observed from the side, a plumb line originating at the pin bone would fall parallel to the leg bone from hock to pastern and touch the ground behind the heel of the foot. The resulting angles produced at the hock and stifle joint will be most ideal for easy walking and a minimum of joint problems.

Feet: Meat goats need strong pasterns and strong, well-formed feet with tight toes, deep heel and level sole. Such feet are highly resistant to injury or infection and easy

to keep trimmed. Goats with uneven toes and extremely weak pasterns should be culled.

Muscling

Meat characteristics can be visually determined by examining the animal hindquarters, loin, shoulders and neck.

Hind Quarters: A long, deeply attached muscle, relatively thick at the thigh and stifle is desirable in meat goats. Heavier muscling on the outside of the leg is acceptable. Muscle over the thurl and rump should be obvious.

Loin: The loin eye or ribeye is typically the best indicator of meatiness in market goats. It should be wide with a symmetrically oval shape on each side of the backbone. This muscle should carry forward over the ribs or rack.

Shoulders: The goat's muscling should increase from the withers to the point of the shoulder with the thickest muscle occurring immediately above the chest floor. The circumference of the forearm is the second most important indicator of meatiness, so the forearm muscle should exhibit a prominent bulge and should tie in deep into the knee.

Neck: The juncture of the neck and shoulder should be free of excess tissue. It should gently slope to indicate muscling. Smoothness and quality are important in this area. A long clean neck with muscling in balance to the remainder of the animal is desired.

Condition

The term *condition* refers to the amount of finish or fat the animal is carrying. Goats deposit fat internally before they do externally. The ideal condition is a thin, but

uniform, covering over the loin, rib and shoulder. The external fat thickness over the loin at the 13th rib should be between .08 to .12 inches or an average .1 inch.

SELECTION FOR BREEDING GOATS

There are many different types of goats with many different uses. It is important to realize the traits that these animals have and be able to apply them to a scenario where these types of goats can be the most efficient and economical. These traits include: Structural Correctness, Size and Scale, Body Capacity, Femininity and/or Masculinity, Durability, Breed Character and Reproductive Soundness.

Structural Correctness: How well the animal is put together. In breeding animals, it is absolutely imperative that these animals are comprised of good structure. The goats need to be sound and free moving off of their feet and legs, and they need to be level down their top and over their rump.

Size and Scale: The goats need to possess some length of body, and they need to appear growthy and late in their maturity pattern.

Body Capacity: This refers to the amount of internal volume the animal has. This is typically analyzed by studying the base width, rib shape and depth.

Femininity and/or Masculinity: More important in the doe, it describes how closely the animal looks like a female. A doe should look like a doe and she should be more refined in her features than a billy would be. Conversely, the buck needs to be

masculine. His secondary sex characteristics need to be well developed and he needs to be rather stout in his appearance.

Durability: This refers to the bone structure and the expected longevity of the animals. An animal that is more durable is generally more rugged in their design and they will have more enhanced longevity in the herd.

Breed Character: This is a term that describes how closely that animal resembles what is ideal for that breed. An Angora goat needs to look like an Angora goat, etc.

Reproductive Soundness: In the female, this refers to the soundness of the reproductive tract and whether or not the doe is cycling. It is also critical in does to evaluate the attachment and quality of the udder and the teats. This will help eliminate any udder problems in the future. The males, on the other hand, need to be evaluated for scrotal circumference and for breeding soundness. All males that will be used for breeding should have a semen evaluation done.

Grade Standards for Goat

The grades assigned were taken from "Meat Goat Grade Standards" published by the Virginia Department of Agriculture and Consumer Services.

Prime

Slaughter kids having minimum requirements for the Prime grade will exhibit superior meat type conformation and possess a high degree of finish. Prime slaughter kids are smooth over the top and the backbone is well covered and smooth when the hand is pressed down on the back. Prime grade kids will have the appearance of being thickly muscled throughout the body and particularly well muscled in the rear legs and loin. Prime kids shall be at least moderately wide over the back, loin, and rump. Shoulders and hips should be smooth in appearance. The overall appearance of Prime

17slaughter kids shall be one of very good overall health and give indication of a very high level of nutrition.

Choice

Slaughter kids meeting the minimum requirements for the choice grade will exhibit at least average meat type conformation. Choice kids will possess a moderate amount of finish over the ribs, back and loin. Choice kids, when handled, will express at least average muscling in the leg and loin. They should also express at least some development of the brisket. When handled the backbone of choice kids will be only moderately prominent to the touch. The overall appearance of Choice slaughter kids shall be one of good overall health and give indication of an adequate level of nutrition.

Choice slaughter kids will have a muscling score of at least slightly thick throughout their body. They will express average or better width through the loin, back and rump. The shoulder and hip will be moderately smooth.

Good

Slaughter kids meeting the standards for the Good grade will have meat type conformation that will be less than average. The muscling present in Good grade kids will be typical of slightly thin muscling patterns. Good grade kids are relatively narrow in relation to body length and height and somewhat narrow over the back, loin, and rump.

Good grade goats will have little or no detectable fat cover and very little or no development in the brisket. When handled Good grade kids have prominent ribs and backbone indicating little or no fat cover. The loin and back will be more angular and the leg will be less than average in conformation.

Good grade kids will be healthy in appearance and have the potential to reach the choice grade before breaking yearling teeth.

Utility

Slaughter kids failing to meet the minimum standards for the Good grade will be graded Utility. Utility kids will exhibit symptoms of poor management including lack of adequate nutrition, lack of parasite control or poor genetics. Utility kids are very thin fleshed with a hair coat that is rough and dull in appearance.

Southern University, Louisiana State University and Louisiana Department of Agriculture and Forestry Live Classification Criteria

Selection 1: A goat in this class will be moderately thickly muscled throughout; moderately wide back and loin, moderately neat and smoothly laid in shoulders and hips, slight fullness of plumpness over the rib, loin, rump and legs and somewhat rounded and moderately refined appearance.

Selection 2: A goat in this category will be slightly thickly muscled throughout, and slightly wide back and loin with flat loin, rump, and leg (little or no evidence of fullness). Hips and shoulders are somewhat smoothly laid in, but appear slightly prominent and refined.

Selection 3: A goat in this classification will be thinly muscled throughout with narrow back, loin, and rump with slightly sunken appearance, tapering and narrow legs with somewhat prominent hips and shoulders. May have heavy bone and thin fleshing with coarseness or small bones and angularity with over-refinement.

Cull: Very thin muscled goat with back, loin and rump show little indication of muscling. It has moderately shrunken appearance and hips and shoulders are very prominent.

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DIFFERENT SELECTIONS AND GRADING OF GOATS

Selection and Evaluation of Live Meat Goats and Grade Standards

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Alpine Does

The French Alpine

- The French Alpine is larger and more rangy got and more variable in size than are the Swiss breeds.
- Mature females should stand not less than 30 inches at the withers and should weigh not less than 135 pounds.
- Males should stand from 34 to 40 inches at the withers and should weigh not less than 170 pounds.
- French-Alpine females are excellent milkers and usually have large, well-shaped udders with well-placed teats of desirable shape.

Nubian

The Nubian

- The Anglo Nubian is an all-purpose got, useful for meat, milk and hide production.
- A mature doe should stand at least 30 inches at the withers and weigh 135 pounds or over.
- The males should stand at least 35 inches at the withers and weigh at least 175 pounds.

The Angora Goat

The Angora Goat

- The Angora Goat is a small animal as compared to sheep, common goats, or milk goats.
- There is considerable variation in the size of goats, but mature bucks will usually fall in a weight range of from 180 to 225 pounds but do not reach their maximum weight until after five years of age.
- Does will fall in a weight range of from 70 to 110 pounds when mature.

Boer Buck

The Boer Goat

- The Boer goat is primarily a meat goat with several adaptations to the region in which it was developed.
- Producing weaning rates in excess of 160% the Boer goat doe is a low maintenance animal that has sufficient milk to rear a kid that is early maturing.
- The mature Boer Goat ram weighs between 240-300 lbs. and ewes between 200-225 lbs.

Boer Doe

Boer Goat Traits

- Average daily gains over 0.44 lb/day (0.3-0.4 lbs/ day).
- The ovulation rate for Boer goats ranges from 1 to 4 eggs/doe with an average of 1.7.
- A kidding rate of 200% is common for this breed.
- Puberty is reached early, usually about 6 months for the males and 10-12 months for the females.
- The Boer goat also has an extended breeding season making possible 3 kiddings every 2 years.

Spanish Buck

Spanish Goat

- The term Spanish is used to describe any goat of unknown ancestry.
- Most are wild or at least semi-wild.
- Size varies greatly due to climate, terrain, and available breeding stock.
- Body shape, ear shape, horns, hair and color are not considered.

Toggenburg

The Toggenburg

- The Toggenburg is a Swiss dairy goat from Toggenburg Valley of Switzerland.
- Slightly smaller than the Alpine breeds, the does weigh at least 120 lb/55kg.
- Toggenburgs perform best in cooler conditions. They are noted for their excellent udder development and high milk production, and have an average fat test of 3.7 percent.

La Mancha

Provided by Karen Lee

La Mancha

- This breed was developed in the United States of a Spanish breed that was crossbred with other breeds.
- This breed is distinguished by having short ears.

Oberhasli

Oberhasli

- Oberhasli, another Swiss breed, is colored Chamoisee, ranging from light to a deep red bay with black facial stripes, muzzle and forehead.

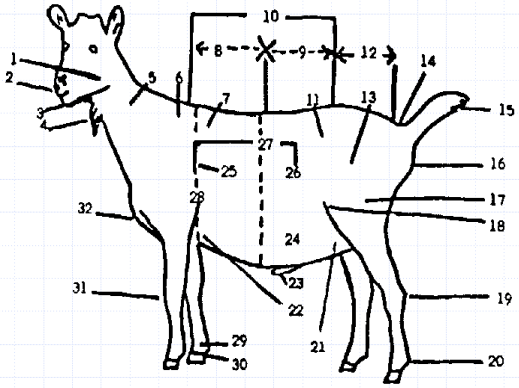
Saanen Does

The Saanen

- The Saanen dairy goat originated in Switzerland, in the Saanen Valley.
- Saanen does are heavy milk producers and usually yield 3-4 percent milk fat.
- It is medium to large in size (weighing approximately 14 lbs/65kg) with rugged bone and plenty of vigor.

Pygmy Goat

Meat Goat Selection Criteria



Parts of the Goat

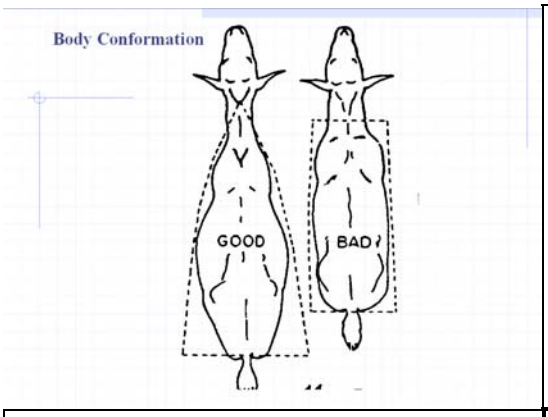
1. Jaw	9. Loin	17. Thigh	25. Fore Rib
2. Muzzle	10. Back	18. Stifle	26. Rear Rib
3. Throat	11. Hip Bone	19. Hock	27. Barrel
4. Wattle	12. Rump	20. Dew Claw	28. Heart Girth
5. Neck	13. Thurl	21. Real Flank	29. Pastern
6. Withers	14. Tail Head	22. Fore Flank	30. Hoof
7. Crop	15. Tail	23. Sheath	31. Knee
8. Chine	16. Pin Bone	24. Belly	32. Chest

Meat Goats Selection Criteria

- Conformation
- General Appearance
- Muscling
- Condition

Conformation

- Market desirability: degree of finish in relation to weight, age and size
- Rectangular, with straight, level top and bottom line
- Rump slightly slope
- Straight legs
- Wide forelegs, shoulder and breast area



Conformation

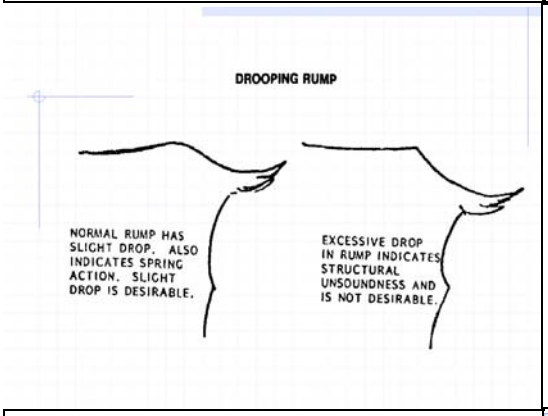
- From the rear:
- Muscular and long Hindquarters
- Rump, loin and back should be uniform in width
- Feet and legs should be straight and spaced square and wide under the goat

General Appearance

- Goats must have an adequate length of cannon bone from knee to pastern and should be above average in overall length of body and general size
- Height measured at the wither should be slightly more that at the hips
- The head should combine the beauty of eyes, nose, ears and overall form with strength and refinement

FRONT END

- The goat should have a wide chest floor and prominent brisket
- This insures room for the heart and lungs to do their work with ease and also is evidence of proper muscle and ligament strength



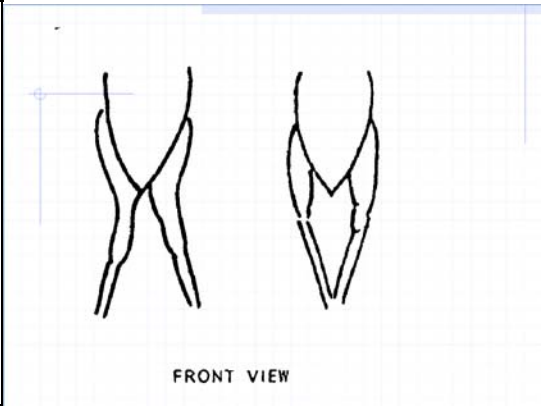
Rear View

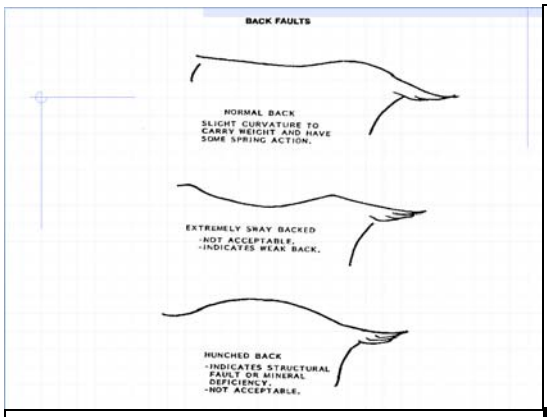
FRONT LEGS

- The goat's front legs should be straight, perpendicular to the ground, sound in the knees and full at the point of the elbow
- The legs should move with the front feet pointing straight ahead

Back:

- A back that is straight, strong, wide, long and level is desired in goats





RUMP

- The shape of the rump is important as it affects leg set
- The goat's rump should be long, wide and level from thurl to thurl, cleanly fleshed and have a slight slope from hips to pins.

Hind Legs:

- The goat's rear legs should be wide apart and straight when viewed from the rear

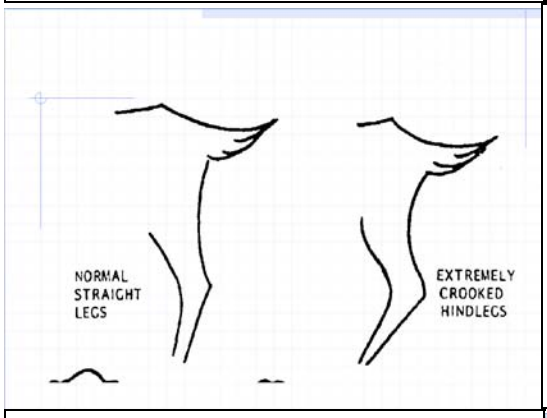
Muscling

Meat characteristics can be visually determined by examining the animal's:

- Hindquarters
- Loin
- Shoulders
- Neck

Hindquarters

- A long, deeply attached muscle, relatively thick at the thigh and stifle is desirable in meat goats
- Heavier muscling on the outside of the leg is acceptable
- Muscle over the thurl and rump should be obvious

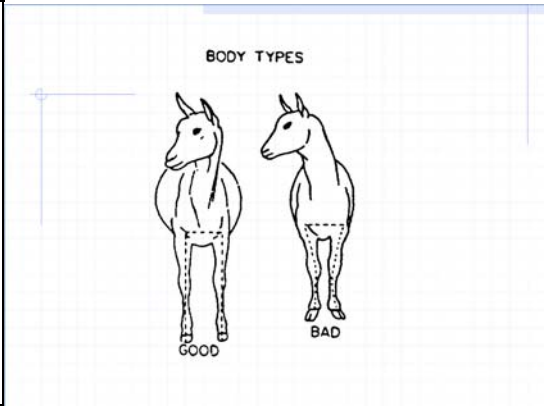


Loin

- The loin eye or ribeye is typically the best indicator of meatiness in market goats.
- It should be wide with a symmetrically oval shape on each side of the backbone.
- This muscle should carry forward over the ribs or rack.

Shoulders

- Muscling should increase from the withers to the point of the shoulder with the thickest muscle occurring above the chest floor.
- The circumference of the forearm is the second important indicator of meatiness
- The forearm muscle should exhibit a prominent bulge and should tie in deep into the knee.

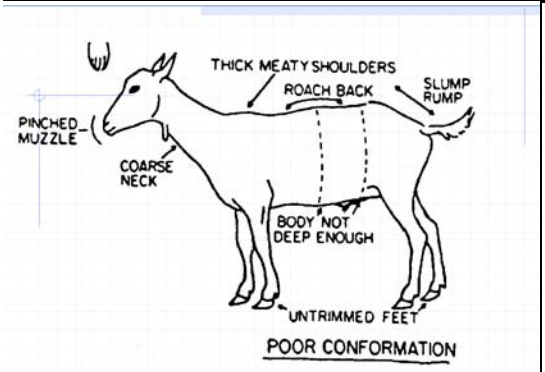


Neck

- The juncture of the neck and shoulder should be free of excess tissue
- It should gently slope to indicate muscling
- Smoothness and quality are important in this area
- A long clean neck with muscling in balance to the remainder of the animal is desired

CONDITION

- The term condition refers to the amount of finish or fat the animal is carrying
- The ideal condition is a thin, but uniform, covering over the loin, rib, and shoulder
- The external fat thickness over the loin at the 13th rib should be between .08 to .12 inches or an average .1 inch



Selection for Breeding Goats

- Structural Correctness
- Size and Scale
- Body Capacity
- Femininity and/or Masculinity
- Durability
- Breed Character
- Reproductive Soundness

Grades and Standards

The success of goat sales is limited by the lack of:

- Market standards for live goats
- Goat carcasses to facilitate communication among different sectors of the industry
- Information and specification for goat meat

Why Grade Standards?

A determination of factors that:

- Differentiate the amount and palatability of meat from different types
- Allow terminology and specifications to be standardized for use by all segments of the industry
- Allow for different forms of goat primal and retail cuts to be available for consumers
- Would facilitate selection for animals with desirable meat traits on farms and ranches.

General Goal

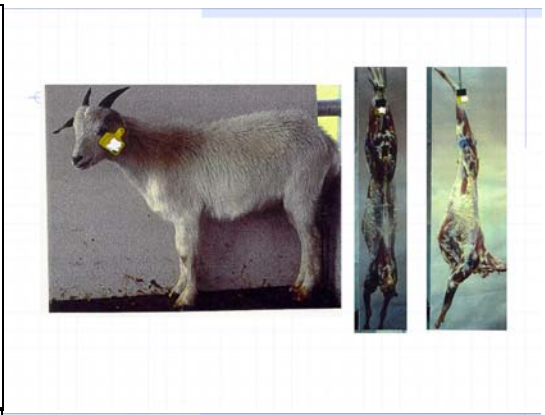
Overall goal of the project is to differentiate meat palatability of goats of different sexes, weights and conformation specifications, and conduct market verification of meat cuts to see if specifications are met.

MEAT GRADE STANDARDS (VSU)

- PRIME: Exhibit superior meat type conformation and possess a high degree of finish.
- CHOICE: Exhibit at least average meat type conformation and possess a moderate amount of finish over the ribs, back and loin

MEAT GRADE STANDARDS (VSU) continued

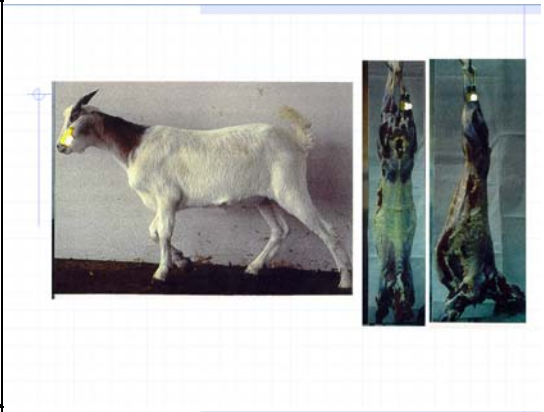
- GOOD: Exhibit below average meat type conformation with thin muscling patterns. Good grade kids are relatively narrow in relation to body length and height and somewhat narrow over the back
- UTILITY: Utility kids are very thin fleshed with a hair coat that is rough and dull in appearance general indication of poor management including lack of adequate nutrition, lack of parasite control or poor genetics.



Live Classification Criteria (SU/LSU/LDAF)

Selection 1:

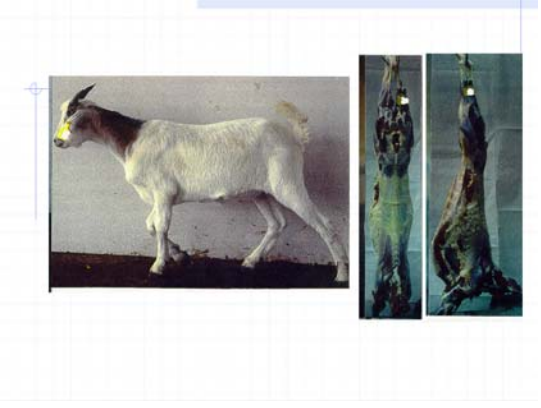
- Moderately thickly muscled throughout
- Moderately wide back and loin
- Moderately neat and smoothly laid in shoulders and hips
- Slight fullness of plumpness over the rib, loin, rump and legs
- Somewhat rounded and moderately refined appearance



Live Classification Criteria (SU/LSU/LDAF)

Selection 2:

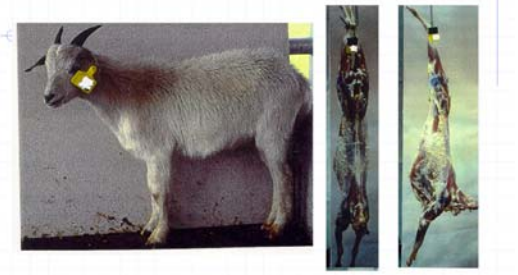
- Slightly thickly muscled throughout
- Slightly wide back and loin with flat loin, rump, and leg (little or no evidence of fullness)
- Hips and shoulders are somewhat smoothly laid in, but appear slightly prominent
- Slightly refined appearance



Live Classification Criteria (SU/LSU/LDAF)

Selection 3

- Thinly muscled throughout
- Narrow back, loin, and rump with slightly sunken appearance
- Tapering and narrow legs with somewhat prominent hips and shoulders
- May have heavy bone and thin fleshing with coarseness or small bones and angularity with over-refinement



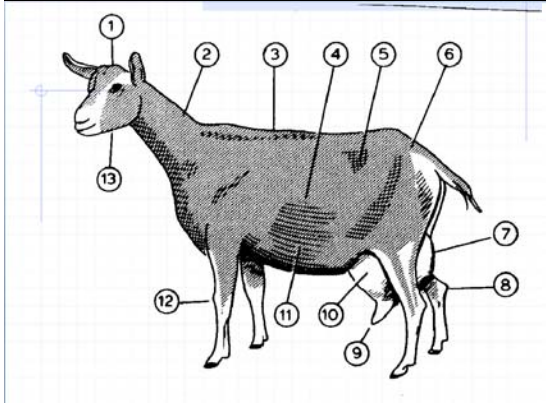
Live Classification Criteria (SU/LSU/LDAF)

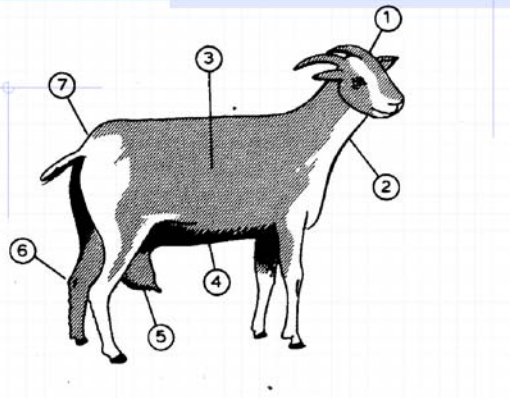
Selection 4 (Cull):

- Very thin muscled
- Back, loin and rump show little indication of muscling
- Moderately shrunken appearance
- Hips and shoulders are very prominent

Why Goats?

- About 135,000 30-pound goat carcass equivalents are imported annually, primary from Australia and New Zealand.
- The major demand for goat meat in the United States comes primarily from ethnic populations.





Major Goat Breeds in the USA

The Economics and Marketing of Goats:

The Case of Missouri

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Introduction

In recent years, goat and goat meat have become acceptable and recognized as the source of healthy meat in the United States. We are going to explore the issue under two broad categories; the economics of goats as farm animal and the marketing of goats. Under the economics of goats, we will examine the trend in the demand and supply of goat meat, trend in the number of goats slaughtered in the U.S., and the cost of raising goats in Missouri. In the marketing of goats, we will explore Internet or electronic goat marketing, as well as other niche marketing strategies for goats.

Trend in Demand for Goats

- **Increase in Demand:**

Within this decade, the goat industry in the United States (US) has witnessed a significant increase in demand. This growth can be attributed to different causes, such as immigration into the United States by ethnic groups, food preference and religious

affiliation, and demand from the health conscious communities or groups. We will examine these and other causes individually.

Immigration into the United States

The influx of ethnic groups into the US has accelerated in recent years. These groups are comprised of both legal and illegal immigrant. The number who comes in legally has gone from 51,000 to approximately 62,000 annually since 1991. Immigrants who enter the US illegally are currently estimated to be between 1.9 and 3 million annually (Ajuzie, 2002)[1] Hispanics remained the largest minority group in the U.S. since 2006, with 44.3 million persons in July 2006, or nearly 15 percent of the total population. With a 3.4 percent increase between 2006 and 2007, Hispanic was the fastest-growing minority group. By 2050, the population of Hispanic-origin is estimated to reach 25 percent of the U.S. population, or about 96.5 million persons. According to (Shiflett, 2007)[2] if the Hispanic population grows to 96.5 million persons by 2050, then goat consumption in this country could reach 96.5 million pounds- or more than double the amount consumed today. But the Hispanics are not the only group that enters this country illegally. A rough estimate puts that number at half a million annually. These numbers are of particular significance to the goat industry because the individuals involved are coming from countries or regions where goat meat is regarded as staple meat and its consumption is high. While in the U.S., they would like their demand for goat meat to be met. It is estimated that given its rate of growth, the U.S. goat industry can meet this challenge.

Food preference and religious affiliation

Consumption of goat meat fluctuates with the religious affiliations of the ethnic groups whose staple meat is goat. For example, demand increases significantly during Christian holidays, such as Christmas and Easter, and Muslim holidays. There is a corresponding rise in price following the increase in demand for goats and goat meat. In July 1998, a top kid was sold on the Internet for $59.50. Interestingly, a similar top kid

was bought for $72.25 on the Internet in December 1998. With such knowledge, producers can target the periods of high demand to maximize profit.

The preference for goat meat is constantly increasing. A few years ago, a very large percentage of US citizens did not eat goat meat. Recently, even though those who do not eat meat are still in the majority, their number is dwindling. This is because goat meat is gaining acceptance among those who disliked it before.

Demand from the health-conscious and relatively young community

Goats, which are mostly raised on free range, tend to be leaner than other livestock, such as beef and hog. They are also lower in cholesterol. These characteristics of goats make their meat attractive to the young members of our communities who are health-conscious. Because this group is growing at a fast place, the demand for goat is increasing at a similar rate.

Demand for goat meat from the health food sector is on the increase. This mirrors the increasing demand among the health- conscious young communities who shop for food, medicine and/ or food supplements at health food stores.

- **Demand for Goats is Inelastic:**

Those who eat goat meat have an inelastic demand for the animal. This means that a decrease in the price of goats or goat meat does not necessarily lead to the purchase of more goats. On the other hand, an increase in price does not result in a significant decrease in quantity of goats or goat meat demanded and purchased. These two factors indicate that a producer does not have any incentive to reduce the price of goats. Instead, he has an economic incentive to increase the price of goats. By doing so, he will maximize the profit from his herd.

Trend in the Supply of Goats

The supply of goat meat is known to be elastic. This means that, generally, a unit increase in price, say by a dollar, would result in a significant increase in the supply of goats. Similarly, a decrease in price would lead to a reduction in supply of goats. However, certain conditions could delay these shifts in supply. These conditions include start- up costs, technical know- how, lag, and land resource availability. Let us briefly discuss these variables.

Start-up cost

When the price of goat meat increases, a beginning producer who wants to get into goat production would buy young goats and raise them to a certain weight when he can sell them for meat. Alternatively, he can buy his own breeding stock, which he can breed on his farm. This would require some capital outlay, which he may not have. For a small farmer, he may not have the collateral to borrow what it would take to start a goat operation.

Technical Know-how

Goat production requires that the producer knows how to manage and provide adequate nutrition for the animals. This is not rocket science. The technical know-how could be done with little instruction and reading. This could take some time and result in delayed supply reaction to changes in price. In other words, when goat meat price increases there should be immediate increase in the quantity of goat meat supplied. But because of the time it would take new producers to learn the technique of producing goats, the increase in the supply of goat meat would be delayed. The consequence is that goat meat prices will remain high in the short run.

Time Lag

Time lag is another factor that disrupts the shift in supply following a rise or fall in price. It is based on the fact that goats, like most animals, have favorable times of the year

when they breed and no matter what one does, one cannot instantaneously either increase or decrease their number. It takes time to raise goats to the size when they can be sold profitably.

Land resource availability

Availability of land resource affects both beginning and existing farmers. Existing farmers fall into this category when they do not have useable reserve pasture. Both beginning and existing farmers would have to look for land to buy in order to start or expand production, respectively. The fact that land (pasture) is not readily available will make it impossible for the producer to produce goats, or to increase production in the case of existing farmer; in order to take advantage of a given increase in price. Again, this will distort or dampen the expected increase in the supply of goats or goat meat.

Indication of Increase in Demand and Supply of Goats in the United States

Table 1 shows the number of goats imported into the United States from 1989 to 2011. It reflects a rapid increase in demand for goats in the country, especially in the decade of the 1990s. In 1989, 86,067 goats were imported into the U.S. The peak within this period of time occurred in 1992 with the importation of 172,280 goats.

Table 1: **United States Goat Import Data** (Thousand head, live)

Year	Number of Goats Imported
1989	86,067
1990	99,353
1991	122,932
1992	172,280
1993	136,364*
1994	28,500
1995	1,385
1996	1,144
1997	1,172
1998	2,475
1999	1,166
2000	1,414
2001	3,686
2002	11,874
2003	7,453
2004	147
2005	464
2006	0
2007	33
2008	0
2009	0
2010	687
2011	-

Source: USDA/NASS Data Base
Source: Pinkerton, F. 1995. “Meat Goat Marketing in Greater New York City”

* The number of imported goats went down in 1993, indicating an increase in goat production internally.

Table 2 shows goat exports from the United States within the same time period. The largest numbers of goats, approximately 122,056, were exported from US shores in 1989. From then on, the number of goats exported from US has continued to decline. This is a reflection of the fact that more people in the country are accepting and demanding goat meat. Again, more immigrants to the U.S. are coming from those countries that consume goat as staple meat.

Table 2: **United States Goat Export Data** (Thousand head, live)

Year	Number of Exports
1989	122,056
1990	115,413
1991	53,246
1992	60,444
1993	3,504*
1994	62,385
1995	15,478
1996	77,690
1997	66,924
1998	65,298
1999	71,985
2000	61,218
2001	32,974
2002	26,305
2003	29,579
2004	3,775
2005	3,976
2006	11,075
2007	9,231
2008	18,269
2009	8,820
2010	7,223
2011	4,022

Source: USDA/NASS Data Base

Source: Pinkerton, F. 1995. “Meat Goat Marketing in Greater New York City.

*The sharp drop in exports is attributable to the decrease in the importation of goats into the country.

Trend in the Number of Goats Slaughtered in the U.S.

The reported number of goats slaughtered in the U.S. is taken only from government-approved slaughterhouses and, therefore, underestimates the actual number of goats slaughtered. It does not take into account the goats slaughtered on farms, in the backyards of individuals, and elsewhere around the country. But the important thing is that numbers obtained from the government lead us to conclude that the slaughter of goats is increasing over time. For example, 207,893 head of goats were slaughtered in 1991. This rose to 456,462 head of goats in 1997, approximately 120 percent increase in six years.

Cost of Raising a Goat in Missouri

Generally speaking, the estimated cost of doing business may vary from one region to another or even from one city to another. Much depends on demand and supply of purchased productive inputs. The following costs of materials were taken from South Central region of Missouri. They may differ in other regions of Missouri. But they provide us with basis from which we can make offers to purchase specific inputs or services.

Based on 2000 Prices

	Old Prices	New Price	Range
Purchase price: (Breeding Stock):	$150.00	$225.00	125 - 325
Feed: Hay (1200 lb – big round):	$20.00	$65.00	50-80
Hay (square):	$2.50	$5.50	4.50 – 6.50
Grain (50lb bag):	$3.50	$6.15	5.15 – 7.15
Supplies: Hoof trimmers:	$16.00	$20.00	15 – 35
Grooming brush	$4.00	$8.00	5 - 20
Insecticide powder	$7.00	$6.00	6 - 7

	Old Prices	New Price	Range
Medication: CDT Vaccination [usually vaccinate twice first year and nce/year	$.50	$9/25 goats	.30 - .40
Worming medication (10 – 20 goats)	$8.00 - $15.00	$70 – 90.00/100 goats but may have to deworm 2 – 4 times per year	
Procedures: Stud service	$5.00 – 25.00	$15.00	10 - 35
Vet service	$35.00	$65.00	50 - 75
CAE blood test	$12.00	$12.00	$10 plus shipping
Stool sample - Veterinarian	$3.00 – 7.00	$15.00	12 - 20

Prices of Livestock at 1998 Auction Markets

Electronic Goat Market	July 16, 1998
1. Top Kid	$59.50
2. Culls	29.00

December 16, 1998

1. Top Kid	$72.27
2. Culls	35.00

The difference between prices in July and December can only be attributed to an event like Christmas in December, when demand for goats is relatively higher. In December, a 60 pound goat was sold for more than a dollar per pound. In July, it was below a dollar per pound.

What do we glean from above discussions?

1. There is a clear indication that the goat industry is experiencing a steady growth, which will continue into the 21st century
2. Because of the negative elasticity of demand for goat meat, we find that the demand for goat will keep increasing while prices will not fall as much or at the same rate at which demand increases.
3. Based on the above information, we conclude that this is a great opportunity for goat producers in Missouri to enhance their profitability by producing higher quality goats and selling them through electronic auction or other sources, some of which will be discussed briefly below.

Marketing of Goats

Marketing of goats will be briefly discussed under two headings:

- Internet goat marketing

- Niche or direct goat marketing

Electronic or Internet Goat Marketing

The electronic Internet auction goat marketing procedure was developed by the author in 1998. It has since been transferred to private goat producers in Missouri. It describes a situation where goat producers in Missouri pool and sell their goats collectively on the Internet. It helped to raise the prices of goats in Missouri and neighboring states. For example, in July 1998 a top kid goat sold for $59.50 while a cull sold for $29.00. In December of the same year, a top kid sold for $72.25 while culls sold for $35.00 per head. By 2002, the Top kids were selling for $99.95 per head and culls were selling for 82.00 per head. Since then, prices of Top kids have topped $100.00 per head. It is speculated that prices will continue to increase or moderate at around the one hundred dollar mark, everything else held constant.

Niche Markets - Direct Marketing

Apart from electronic auction marketing (Internet marketing) of goats, there are niche markets that a producer can utilize as he/she tries to sell his/her animals. The difference between these and electronic auction is that in some of these niche markets, producers will be selling directly to the final consumer, thus avoiding the middleman and earning a larger percentage of the marketplace dollar. In this section, we examine some of these markets.

Restaurant Market

In the restaurant market, the producer contracts with some restaurants to supply them with goat meat. They will agree to a schedule for the delivery of the meat. In other words, delivery to the restaurant will follow a prearranged schedule. In other words, delivery to the restaurant will follow a prearranged schedule. The producer will promise to meet federal and state inspection in his/her processing facility. Customers who could

be contracted with in this niche market are managers or chefs of restaurants, where goat meat is cooked and sold. A producer who does not have a slaughterhouse can use custom processing. This is an arrangement whereby a producer arranges to process his/her goats in a government-approved facility.

Ethnic Market

In the United States, there are concentrations of ethnic populations. Some of them are dispersed around the country. Most, if not all, of these groups come from regions of the world where goat meat is eaten in large quantities and is a delicacy. The producer should make an effort to seek out and contract with these groups and supply them with goat meat. He should provide customers with information regarding purchase procedures and slaughter options available to them on his farm. If they prefer custom processing, the producer should find an approved slaughterhouse where they can process their animals. The producers should look for customers among individuals or groups who have migrated to the U.S. from foreign countries. Examples are Mexican, and African populations.

Freezer Market

Like ethnic markets, freezer markets entail discovering and working with different customers. They are provided with information regarding purchase and slaughter procedures. These customers will decide how they want their meat handled. Given such information, the producer slaughters, cuts, wraps, freezes, and delivers the meat at a prearranged schedule to those who want theirs delivered. For those who could come to a producer's farm to pick up their meat, a schedule should be worked out that is convenient for both parties. Producers should make additional efforts to assist customers in picking up their processed meat. Whether helping them to pick up or delivering the meat yourself, the producer should treat his/he customers cautiously to keep them wanting to buy from him and even bringing him new customers. In this case,

customers include the general public. Understanding that more and more Americans are beginning to eat goat meat, the producer should not limit his customer relations just to ethnic populations. The group of Americans who are eating goat meat are those who are usually health conscious and buy food from health food stores. The producer, who is interested in exploring this market niche, may want to start with a visit to health food stores within his are and talking to potential customers. They would be sold on the fact that goat meat is lower in cholesterol and fat than beef, pork, and chicken, which contain growth hormone. A good strategy is to provide them with a healthy recipe for cooking goat meat.

Retail Food Store Market

This involves discovering and contracting with retail food stores to supply them with goat meat. In most cases, these stores are either ethnic stores or health food stores. It is likely that in the near future, general grocery store chains would begin to carry goat meat, and some already do. One has to ask questions to find out which stores are presently carrying this meat and those expecting to start carrying it sometime soon. Customers in this niche market include buyers for small local food chains or managers of individual retail and health food stores in the communities near the farm.

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Goat Production and Nutrition

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I want to welcome you to my presentation and hope that it will be profitable to you. I have looked forward to coming to Missouri since Dr. Ajuzie invited me. Helen Swartz is a friend of long standing and told me that I would enjoy the producers here and I certainly have during this time. I am somewhat handicapped in not being well acquainted with the environment here. I want to commend the organizers of this program for highlighting the importance of marketing. You can do more to increase your profitability by marketing than by all the changes that you can make to your production system. However, I am going to talk to you some about nutrition, grazing and a few items on management such as predators and stress.

I want to say a few general things about goat nutrition. Basically, if you feed your goats like you do beef cattle, you will be OK. However, you need to be sure to have a good level of nutrition 6-8 weeks prior to kidding to prevent ketosis. We have had more problems this year with ketosis than the three previous years. Most cattle range pellets will work well for winter supplementation and are generally a lot cheaper than goat feed. The same feed economics apply to goats and cattle-you can't afford to feed them very much out of a bag at today's prices. At a meeting to organize a goat co-op, a producer said that they had to have $3.00/ lb to pay for their feed. You can only get $7.00/lb when it is barbecued. Australia ships frozen goat for $1.10/lb and frozen cull ewes from Australia and New Zealand are less than $1.00/lb. They are sold for goat in New York, supplying about half the goat meat market in New York. Another item that fits here. Many buyers of slaughter animals want a year round supply. We often get asked about year-round kidding. Basically, the kids produced per year/doe on an

accelerated kidding system such as 3 crops in 2 years, which is often not greater than kidding once a year. This is due to reduced fertility and prolificacy when kidding out of season. Another item, you need at least 30% increase in price to make it cost-effective to kid out of season due to the increased feed costs. One exception is fall lambing of sheep on winter pasture in Oklahoma. Where you have a good cheap forage supply or by-products to feed out of season, it may be economical to produce out of season.

I will touch on minerals briefly. We get asked about copper toxicity in goats. Generally, meat goats can tolerate similar amounts of copper to beef cattle. Angora goats are somewhat in between meat goats and sheep. Basically, there is no need to buy an expensive sheep mineral for goats-they will do as well on the beef cattle mineral. Trace mineral supplementation-similar to beef cattle. In Oklahoma we need Zinc, Copper and Manganese. A good trace mineral salt, such as used for beef cattle, is usually adequate for your goats. Fescue is one of the more important forages in Missouri. It is also an important forage in the Eastern part of Oklahoma. Fescue has some good attributes in that it is tough, it won't die off during a hot dry summer like we have experienced with some of the newer cool season perennial grasses. It has a high carrying capacity, similar to wheat pasture. But it also has some not so good qualities such as endophyte and its associated toxin. Endophyte does affect goats we found out when compared to other cool season grasses. Angora does grazing fescue lost 9 pounds the first 8 weeks after kidding as compared to the wheat pasture where the does gained 6 pounds. Kids on fescue pasture gained 15 pounds in the 8 weeks following kidding, whereas kids on the wheat pasture gained 24 pounds in the 8 weeks following kidding. Yes, fescue does affect goats like it does beef cattle. Presently, we are carrying out a preliminary study on fescue injecting a drug, domperidone, which has been shown to be useful for treating fescue-induced symptoms in horses and beef cattle. Preliminary results show that kids on the treated pastures weigh 22 pounds as compared to 20 for untreated kids. There are plans to sell this drug for horses and for beef cattle in some sort of a continuous release bolus.

Something else on the horizon is a new type of endophyte for fescue that does not produce ergovaline and associated compounds. There are different types of endophytes just like there are grasses. Endophyte is a problem in New Zealand, causing ryegrass staggers. A scientist there set about a world-wide search for different endophytes and identified several non-toxic endophytes. Joe Boutton, a plant breeder in Georgia went over there and incorporated a non-toxic. endophyte into some of his fescue lines. There should be seed for planting test plots this fall, and in about 5 years we should know the answer to whether the fescue is as tough as the endophyte infected KY 31 fescue or not, and know for certain about its lack of toxicity.

We have a long-term demonstration project over in Redding Kansas with Emporia State University using goats to control Serecia lespedeza, a noxious weed. We have a demonstration in lake Oolagah in Oklahoma, north of Tulsa, using goats to control non-grassy vegetation. Pastures often get over- grazed, grasses weakened, open areas and good rainfall are favorable for brushy species coming in. These species are not consumed by cattle, enabling them to grow freely. Goats restore a more equal competition to the system. We also are cooperating with Mr. Wally Olson in Miami, OK using goats on reclaimed mine land to control unwanted vegetation. Another demonstration in eastern Oklahoma using goats to control weedy species on a large ranch. Herbicides have been priced too high for economical use. In other areas, such as around a government lake, there are restrictions on herbicide use. In many cases, goats are the only cost effective method for control of unwanted brush and weed species.

Co-species grazing of goats with cattle or horses works very well. Goats control brush and weeds pretty well, leaving the grass to cattle. Goats thrive under the same management as beef cattle with three exceptions- internal parasites, predators and fencing. There are a few other problems, such as goats like to be on top of round bales in hay feeders and kids may need a water source their own height.Predators can be

controlled with guard dogs, donkeys etc. We have had good success using Great Pyrenees guard dogs. A self-feeder with an exclusion panel for feeding dog food without feeding goats. You can founder a goat on dog food. Guard donkeys are less successful, but can work well, but there must be only one donkey.

Fencing goats in can be a challenge because unlike cattle, they can think and are inherently mischievous. However, the superior brain can figure out how to keep goats in most of the time without being excessively expensive. A Texas paradigm says "if you can see through it or blow smoke through it, it won't hold a goat." There are several fencing options. The first one is 1047 sheep and goat wire with a strand of barbed wire across the top. The vertical wires are 12" apart and goats that get hung by the horns can get their nose turned around and get out. If you have the field fence that has 6 X 6 squares, your goats will get caught. If it is not too much fence, you can use fencing pliers and cut every other vertical. You can also use a strand of electric fence in front of the field fence to keep the goats out. You can also special order a 25" high type of goat wire for converting a barbed wire fence for use with goats. Remove one or two strands of barbed wire as necessary on the bottom, put the sheep and goat wire on the bottom and put the extra strands of barbed wire above it.

Electric fence works very well with goats, but not well with all people. Electric fencing is more management intensive, and if you can't make the commitment to maintaining it don't bother with putting it up. A 5 wire barbed wire fence can be converted for use with goats by placing an electric wire 14-16" off the ground about 6" in front of the fence. Cheap.

There are three essentials for making electric fence work right with goats. The first is to train them to the electric fence before you put them into it. Off-loading a semi-load of goats from Texas into an electric fence is a comedy in the making. Train animals by putting them into a conventional fenced trap and putting electric fence around one side or comer with a little inducement-bale of hay, feeder or whatever. One Oklahoma

producer smashes coke cans and wraps the tabs around the hot wire. The bright flashy can swinging in the wind attracts goats that nuzzle the highly conductive aluminum can. Spend several days, preferably a week training goats to an electric fence. It will sure payoff.

The second secret of electric fencing is to put it up right with good materials. Poor construction or poor quality materials cause maintenance problems and short the fence out, and let animals learn to tell when the fence is out so they can go play. Use a good low-impedance shocker and quality insulators. The third secret is to keep the fence hot-go down to the fence and put a voltmeter on it every day. You will learn when the fence is down and fix it before it is really down and your animals know about it. These three steps will help to make electric fence work successfully for you. However electric fence does not suit all management styles and if it doesn't work for you, don't mess with it.

Ok, we said that you need to be concerned about internal parasites in goats. Missouri has a nice climate for parasites - good moisture and warm days. Internal parasites are important from the standpoint of the health of the animal and the economics since dewormers are a cash expense. We are getting resistance to dewormers Ivomec. The two newest dewonners, dectomax and cydectin, are in the same chemical family as Ivomec and it will not be long before resistance shows up for those two. There are no new dewormers in the line. This makes it most important to manage to prevent the development of resistance to these dewormers. Two areas are important: first reduced use of dewormers and the second is proper use of dewormers, when you use them. Management to reduce picking up internal parasites such as not forcing animals to graze close to the ground, co-species grazing, grazing tilled or hayed ground, fecal egg counts and pasture rotation. Culling wormy animals is also important. Both Australia and New Zealand scientists observed that 10% of the animals produce 80% of the worm eggs on pasture. It is possible to do your own fecal egg counts. Proper use of dewormer involves dosing goats at 1.5 to 2.0 x dose for sheep (Tom Craig)

except Levamisole. Do not inject dewormers; use the injectables as oral dewormers. Holding animals off feed overnight and the day of deworming increases the efficacy of dewormers.

We started an experiment in Oklahoma with planting a shrubby species for grazing with goats. We are trying Mimosa, the ornamental plant-legume readily eaten by goats. In Australia, they plant a relative of Mimosa for grazing by cattle. There is a little work in the US (Auburn, AL) with mimosa for cattle. This should be an excellent browse species for goats. Other species that we are interested in are Black locust and Lespedeza Bicolor.

Stress is the biggest single cause of disease in goats, sheep, dairy cattle, beef cattle, pigs, humans, etc. Many diseases are indicators of stress which management needs to be changed to minimize stress. Some very stress responsive diseases include soremouth, coccidiosis, and caseous lymphadenitis (abscesses) etc. Stress includes such things as weaning, shipping, nutritional deficiency, working in a chute, kidding, wet weather, mixing animals, anything out of the ordinary. Goats are more subject to stress than beef cattle, especially so for shipping. We can avoid nutritional stress, and reduce handling stress to some extent. Stresses are cumulative over a 3-4 week period, so don't stress animals twice in 2 weeks. It takes nearly a month for animals to fully recover from a severe stress.

Weaning is the greatest stress that happens to most goats in their lifetime. This is true for beef cattle as well. What makes weaning a stress is the emotional trauma of separation. Weaning with an electric fence-animals pair up across the fence. Mature aniJi ls are put with the calves to lead them to feed and water and provide company. Calves remain in a pasture that they are used to. Cows are free to go to the next pasture and come back a couple of nights, then don't. I have wondered about applying some of this technology to goats. The South Africans have a system for weaning Angora goats in that they are separated into two herds, does with their kids. They

then switch does in the herds so kids are mismatched with does. They don't nurse, but they have maternal influence of other does. This reduces weaning shock considerably. We need to think about management instead of being reactionary. We think about vaccinations, antibiotics, doctoring etc. As Jimmy Doolittle said, "Americans are good at fixing things, but not very good at prevention." We need to do prevention with management rather than purchased items. Management can substitute for capital and it usually does in many farms in. Australia, New Zealand and South Africa where they have different types of mindsets. This is because they don't have money for fixing problems like we do. Commodity prices are much lower than in the U.S.(i.e. $15 for a 60 lb. kid or $20 for a 65 lb. lamb). These prices do not allow for many inputs.

In conclusion, we must know what our goals are, why we do things and do them better and cheaper than we did last year. We must constantly question ourselves why we do what we do. Instead of fixing the consequence of management problems, we need to fix the management. Managing goats is as challenging as catching them.

Goat Meat Acceptance: Nutritious and Delicious!

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Goat meat consumption around the world

Contrary to the belief of the typical American, human consumption of goat meat is very common around the world. For example, in Greece it is a tradition in many parts of the country to have a feast at Easter-time which includes goat meat. In Northern Italy, goat is often served and enjoyed and in France, *chevon* is considered a delicacy. The northern Chinese include goat in their diet, and in Mexico, *cabrito* (or young goat) is standard barbecue fare. In fact, goat meat is consumed in larger quantities around the world than beef and pork combined[1]. Most Americans are surprised when they hear that, and that surprise is a tribute to our relative ignorance about other cultures, including culinary habits around the world. Besides the dog, the goat is the oldest domesticated animal[2].

Meat goats in the U.S.

According to Dr. Ernie Davis, agricultural economist with the Texas Agricultural Extension Service[3], in 1996, there were about 800,000 meat goats in the U.S., 700,000 of which were in Texas. In addition, federally inspected plants processed 326,000 goats in 1995. It is estimated that 1/3 of all goats are slaughtered at the farm level. Statistics

show that goats are about twice as profitable as cattle[4]. In short, they are an underrated, farm resource. Goats thrive on pasture too poor to support cattle; they are perfect for mountain areas and very hardy.

As for distribution of goat meat, where one lives dictates to a large extent the relative availability of goat meat. Areas that have much racial and ethnic diversity are much more likely to have goat meat available in shopping markets than those areas that are not ethnically diverse. For example, Florida supermarkets are now carrying goat meat in the meat case next to poultry, pork and beef[5]. Many of the customers that use these stores have family roots in South America and the Caribbean, and thus have a history of eating goat meat and a preference for it.

Objectives

The objectives of this paper are to: 1) review the literature exploring the acceptance of goat meat in the U.S.; 2) examine the nutritional qualities of goat meat; and 3) discuss methods of preparation of goat meat.

Public acceptance of goat meat

Dr. Robert Degner, Professor and Director of Florida Agricultural Market Research Center, Florida A & M and University of Florida, has conducted several studies to determine public acceptance of goat meat. The first study was comprised of a series of focus group interviews held in Jacksonville and Tampa[6]. Participants were asked about their attitudes toward goat meat. Participants interviewed expressed surprise that people ate goat meat. They said they associated goats with pets and thought of cartoon or storybook characters. Participants further suggested that “goat” be identified by another name, much like veal is used to refer to very young beef. They suggested that goat, if named in another way could probably be served in trendy upscale restaurants, and thus a market could be developed for it in the U.S.

Another study conducted by the same researchers was a survey of 600 people in Jacksonville and Tampa, who were asked to taste unidentified samples of barbecued goat meat and beef and to rate product characteristics[7]. Participants were asked rate the samples and to answer a series of question about their familiarity with goat meat. The findings were quite interesting. Twenty-five percent of those surveyed had eaten goat before. Forty-two percent preferred the barbecued goat meat to the beef. Thirty-eight percent preferred the barbecued beef, and 20% of those sampled could not distinguish between the two meats. From this study, the authors concluded that properly prepared goat meat could compare favorably with beef.

Another place where a new food could gain acceptance among the general public is at restaurants. Restaurants have been known to set new trends. In this case, too, the average person may be more likely to try something already prepared than if he/she had to prepare it at home. In this study, by the Florida researchers, 630 Florida restaurants serving barbecue and 630 more were randomly selected from a total of 33,000 restaurants listed in Florida[8]. A mail survey was used to ask restaurateurs about their knowledge and possible use of goat meat.

The researchers found that five restaurants were selling goat meat at the time of the survey and five others had sold it but discontinued it. Most knew little about it: they were uncertain of the preparation of goat meat; uncertain of available supplies if they did decide to offer it; and uncertain of impact serving goat meat might have on their sales. One-third of those who returned the survey thought it would complement menus, and one-half of the respondents thought the public would have negative reaction to it.

Texas A&M also has conducted research on goat meat acceptance[9]. In a recent study, the premise of the researchers was that the average American might not be the best person to participate in goat meat acceptance panels. Because the American palette is

unaccustomed to the taste of the meat, they therefore might rate it more harshly than those from countries where goat meat is a traditional food.

The study involved setting up two panels. One contained ten members from the United States; the second one containing members from countries in Asia, South and Central America and the Middle East. All members of the second panel had eaten goat or lamb before. The charge of the panels was to judge the palatability of loin chops and leg steaks of two goat breeds: Angora and Spanish, and three sheep breeds.

Both sets of panelists found differences in palatability. However, the palatability ratings of the panelists from other countries were higher than those of the domestic panelists. Generally, the panelists found sheep to be more palatable than goat, but found similar flavor scores for all breeds.

To summarize from the research, we can say that, (1) goat meat, when properly prepared, compares favorably with beef; (2) restaurants have the potential of playing a key role; and (3) domestic panelists may not be capable of assessing desirability of a product as it would be perceived by foreign consumers.

Nutritional qualities of goat meat

Goat meat can be roasted, barbecued, curried or stewed, with residents of various countries favoring one or more of these methods over others. Several places are now producing goat meat jerky and goat sausage in an effort to create easy ways of increasing acceptability. Because of its low fat content, dry heat and high temperatures will make it tough. So the two basic rules for success are to cook it slowly (low temperatures) and to cook it with moisture (either water or oil).

Goat meat does have a taste that is different from beef or pork. Some want to emphasize these differences, and thus have recipes to bring out the distinctive tastes.

Others want to partially or totally mask the goat flavor. One thing is certain: an unpleasant eating experience tends to stick with people. Two of the recipes listed at the end of this paper are from a publication of the Texas Agricultural Extension Service,B-5034, called South Texas Cabrito Recipes. The curried goat recipe included here comes from the mother of a Lincoln University employee, so the author can confirm that it is quite tasty. Another publication that contains many recipes is a Fact Sheet produced at the E. (Kika) de la Garza Institute for Goat Research at Langston University in Langston, Oklahoma[10].

Websites and other resources

If you have an interest in finding out more information about goat meat acceptance and other research papers, you might want to check the World Wide Web on your computer. The two that I found very useful are the web site of the Boer Goat Association: www.boergoats.com

There are two web sites from Texas A&M University:

The Ag News Website: agnews.tamu.edu/new.htm

The Research and Extension Website: Lubbock.tamu.edu

One website that may be of interest contains a variety of books about goats:

Planetpets.simplenet.com/bookgotl.htm

Lycos is recommended search engine to find additional useful information when attempting a keyword search (for example, using “cooking goat meat” as keywords).

Some ways that you as a goat producer can enhance public acceptance of goats and goat meat in you area are to encourage visits from local school children, including a tasting of one of your favorite recipes. You could include a display of library books about goats designed for children. If it seems easy to do on your farm, perhaps you could set up a petting zoo and display some of your goat products for tasting. You could also volunteer to help with goat 4-H projects in your county. The county Extension folks are

always looking for interested volunteers. And entering your farm in open farm day events can also encourage visits from families. Again, if you included a display of foods that you made from goat meat for sampling, that could increase public acceptance of these foods. Of course, if you do this, please be sure to check with your Cooperative Extension staff to make sure you are not accidentally introducing any risk of food-borne illness if you do serve food. Finally, you can get together with some of your friends who also produce goats and assemble cookbooks of your favorite recipes. This could include dairy goat recipes as well. Who knows, the next time there is a Taste of Missouri fair, one of your products may be the winner!

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Recipes for Goat Meat

Mother of Mark Pabarue, Lincoln University Employee: Recipe for Curried Goat

4 lbs. goat meat
2-3 tablespoon vegetable oil
2 teaspoon curry powder
1 teaspoon salt
1 - 2 onions or scallions, chopped
2 chili peppers
1 teaspoon ground black pepper
2 teaspoon garlic powder
1 cup water

Preparation:

Clean, wipe and cut meat into bite sized pieces - not too small, as they will shrink when cooked. Season goat meat with salt, pepper, onions, and garlic powder, and put in large bowl (or other container with a lid). Mix well so all flavors are blended in the meat. Rub curry powder into the meat with hands. Cover mixture and put in refrigerator for 2 hours to soak up flavors.

Heat the oil in a big heavy skillet. Sauté the meat until browned, then add water. Cover the skillet and cook over very low heat for 1 - 2 hours, or until meat is tender as you like it. Check it occasionally while it's cooking to make sure it has enough water and does not stick or burn. Add water if necessary

If you want to thicken the sauce into a gravy, add cornstarch or flour, as you prefer. Serve over rice.
Sometimes people add pigeon peas or butter beans to the meat while it is cooking.

Recipe for Goat Meat Chili

2 Tablespoon cooking oil
2 Cup chopped onions
1 Teaspoon oregano
2 T ground cumin
1 t. garlic powder
1 T salt
3 lbs. Lean ground goat meat
½ C. plus 2 T. chili powder
½ C. flour
8 C. boiling water

In heavy pot, sauté onions in cooking oil, add oregano, cumin, garlic powder and salt. Stir and sauté until the onion is almost clear, then add ground goat meat and cook and stir until crumbly and almost gray. Add chili powder and then the flour, stirring vigorously until thoroughly blended. Last, add boiling water, bring mixture to a boil, and simmer for not more than one hour. Seasonings, including cayenne pepper, may be adjusted to individual taste at this time. This recipe makes about 14 (8 oz.) cups of chili. Adding pinto beans to this chili is not recommended. Serve beans as a side dish.

Mexican Rice

Prepare 1 Cup of uncooked rice according to package directions. While the rice cooks, prepare the following ingredients:

1 lb. Lean ground goat meat
1 medium bell pepper, seeded and chopped
1 medium onion, peeled and chopped
1 8 oz. Can of tomato sauce
1 heaping T chili powder
½ t. salt
¼ t. oregano
½ t. cumin (powdered or seed)

Sauté onion and bell pepper in 1 T. oil; then add ground meat and cook until nearly done, stirring and breaking up with a wooden spoon. Add spices, mix well and then add tomato sauce. Stir to mix well. Add prepared rice (drained if excess water), mix well and let stand 15 minutes before serving.

Source: Utilization of Goat Meat and Goat Meat Products, Frank Pinkerton, Ph.D, Langston University, PO Box 730, Langston, OK 73050, (405) 466-3836

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