

Meat Goats

Meat goats have become very popular as a 4-H youth project. With the increase in ethnic populations in the United States, there are emerging markets for meat goats and opportunities for new goat producers. Producing a product for these markets requires a basic understanding of meat goat selection and care. A successful meat goat project experience really begins at the time you select your animal. All livestock producers look to selection to improve the overall quality, production, and performance of their animals.

The type of goat you select depends on your target market and project goals. Consumers who eat chevon (goat meat at heavier weights) or cabrito (young goat meat at lighter weights) desire a product that is palatable and plentiful. This chapter looks at traits that are typically selected for in meat goats and at how those traits relate to the type of carcass they produce.

Quality Assurance and Animal Welfare

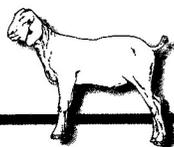
Quality assurance and animal welfare are linked together because both improve animal well-being, product quality, and food safety. Consumers and consumer groups want to know the product they purchase is from animals that were treated humanely. Consumers also want food products to be wholesome and safe. Consumers have a voice in the retail meat case. If they lose confidence in products that they have consumed in the past, they may not purchase that same product again.

The meat goat industry is relatively new in the American marketplace, so building consumer confidence in the chevon or cabrito products is crucial to building a loyal customer base. Consult with your 4-H educator or 4-H club advisor for proper animal welfare, handling, and health practices to ensure production of safe, wholesome products.

The regulatory agencies that play a role in quality assurance include the United States Department of Agriculture (USDA), Food Safety Inspection Service, Food and Drug Administration (FDA), and Environmental Protection Agency (EPA). These agencies enforce regulations related to agriculture, drug usage, live animal inspection prior to harvest, and post-harvest carcass inspection. They also set standards for residue and bacterial levels in products. These agencies work for the benefit of the consumer and the producer. As livestock owners, we must realize that animals that are treated with the best care perform the best and make a product the consumer desires.

Selecting Meat Goats

Selection is very important in meat goat projects. You can continue to improve your selection skills once you have the basics in place. Some people can easily select an animal at a young age knowing what that animal will look like at its targeted end point. This takes years of practice. Do not hesitate to ask someone with experience and expertise in selecting meat goats to help you start your goat project.



Animals differ in growth potential, growth rate, structural soundness, muscle, volume or capacity, and style and balance. Select your goat based on your target market. In meat goat production, there must be the right balance between muscle, lean tissue, and fat cover. Goats for the cabrito market must have enough muscle and fat cover to satisfy the consumer at the desired weight of 15 to 30 pounds. Goats for the heavy chevon market must have enough muscle and lean growth to satisfy the consumer at a desired weight of more than 40 pounds. The type of goats for cabrito or chevon meats differ in growth rate, frame size, and muscling.

As the meat goat industry continues to develop, so do the resources that 4-H members and producers use to make progress with their animals. Studying pictures of champions and watching shows will help you to distinguish a good meat goat from a poor meat goat. Though any breed can produce goat meat, some breeds (for example, Boer, Kiko, and meat goat crossbreds) are better suited for this purpose.

Selection Criteria

The following descriptions for structural correctness, muscling, volume and capacity, style and balance, as well as growth potential have been adapted from TAMU 4-H Meat Goat Guide, the Texas Agriculture Extension Service.

Structural Correctness

Structural correctness is an evaluation of the skeletal system or bone structure. How the goat presents itself while standing and moving are all part of structural correctness. The ideal meat goat has a neck that extends out of the top of the shoulder with its head held high. Legs should be

placed squarely under the body. The ideal meat goat should be wide throughout and should have a long top and level rump. A slight tilt from hooks to pins is desired (this aids during kidding in meat goat does). Meat goats should have strong feet and pasterns, and have heavy bones. Goats with weak topline, weak pasterns, steep rumps, and coarse or open shoulders should be avoided.

Muscle

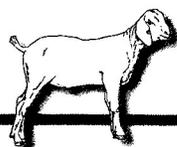
A wide-framed goat most likely has more muscle than a narrower goat. When viewed from behind, the widest part of the goat should be the stifle with well-defined leg muscles. A meat goat should have a thick back and loin and carry thickness through to the rump. When handled, the meat goat should have a firm muscular handle. Chest floors should be wide and the forearm and shoulder should be broad and muscular. Some believe that the chest and forearm are the best indicators of muscle in young goats that are yet to develop. Avoid selecting narrow animals. Also, avoid selecting goats that have no dimension and shape to their forearm, that lack thickness and width to their topline, or that have minimal shape and dimension to their leg.

Volume (Capacity)

Volume, or capacity, refers to the length and depth of the goat. Meat goats should be long bodied from the top of the shoulders to the pins. They should have plenty of depth and spring of rib (girth). Avoid selecting flat-ribbed, tight-hearted (lacking girth), and short-bodied meat goats.

Style and Balance

Style and balance refer to how all parts of the goat blend together. The neck should lay neatly into the shoulder, the shoulder



should blend smoothly into the rib/rack, the rib/rack should flow into the loin, and the loin should blend into the sirloin/leg. When evaluating for balance it is usually helpful to step back and look at the whole goat. What does the entire picture look like? All the parts should appear to be one cohesive unit and appear proportionate. A goat that is well balanced catches your eye.

Growth Potential

The type of goat you select should be based on your target market and project goals. If you want a fast-growing goat for the heavy chevon market or even the show ring, you need to select an animal that has the ability to grow rapidly. Larger-framed goats are

generally better suited for faster growth rates and growth potential.

When selecting your meat goat there are a few things that you must keep in mind. Smaller frame kids may look like they have more muscle but may not develop to your expectations for frame and weight. Likewise, selecting the largest meat goat kid in the pen simply because of size may not be the best move either. You should look for a combination of traits that will result in a meat goat that fits your desired goal. This is a skill that develops over time. Ask for help during the selection process to obtain the best animal possible.

See figures 8.1 and 8.2 for illustrations of selection criteria.

Figure 8.1. There are many things to consider in evaluating a meat goat. This meat goat is balanced, well-muscled front to rear, and wide based with more muscle shape to its thigh and leg.

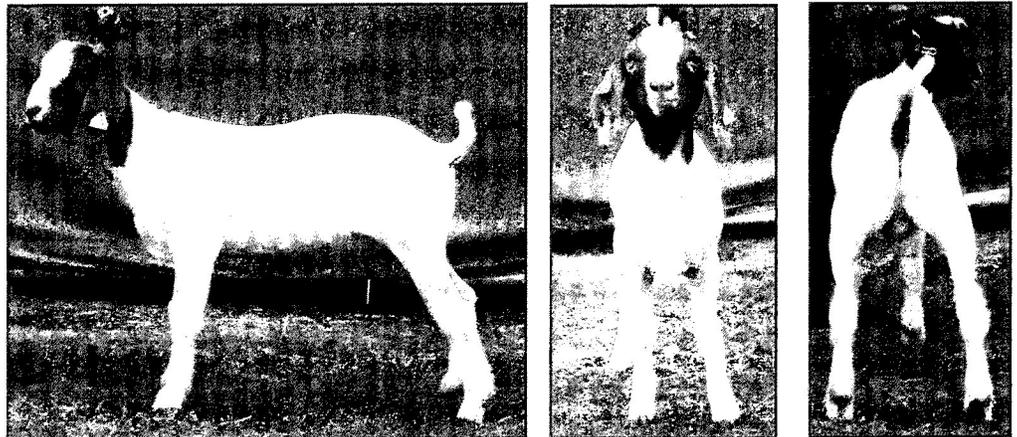
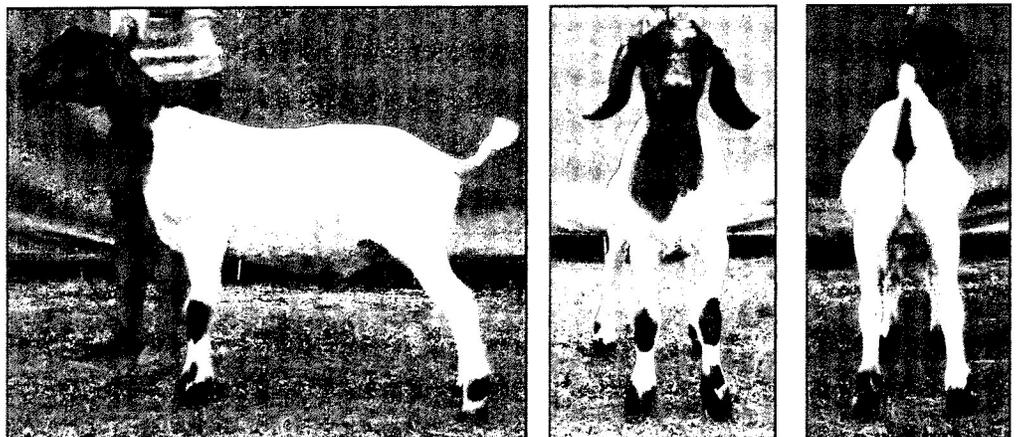
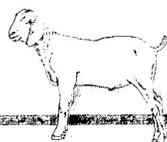


Figure 8.2. This meat goat is thinner and narrow based with a flat, elongated muscle pattern through the thigh and leg.

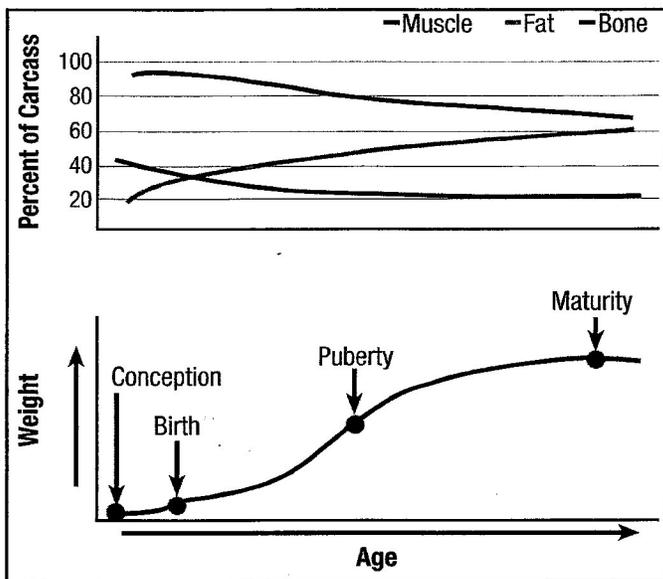


Ohio State University Extension.



Targeting for the Ideal Meat Goat Carcass

Selecting meat goats that have the proper structure to produce a heavy-muscled meat goat is important for resulting in an above average carcass. This muscle development should be lean muscle growth on relatively young meat goat kids. In some other meat animal species, there are selection criteria that provide measurements as indicators of quality (palatability or taste) and yield (an estimate of the amount of saleable product from the carcass when compared to the amount of waste). Since this is a relatively new industry, no official standards for carcass quality and yield have been set for meat goats.



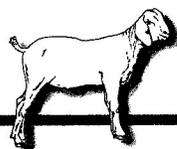
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Figure 8.3. Typical growth chart for a meat goat.

There are many selection criteria that are based on visual evaluation of the meat goat. Some of those are also indicators of the type of carcass that you can expect from the goat. In table 8.1, as the weight of a meat goat increases (due to age and time on feed), there is an increase in the percentage of total fat, an increase in the percentage of total muscle, and a *decrease* in the

percentage of total bone. Total fat almost doubles so that as a meat goat matures, fat becomes a larger percentage of the carcass. Figure 8.3 shows that the carcass of a very young goat is mostly muscle, and there is more bone than fat. At puberty, there is about half as much fat as muscle. At maturity, there is almost as much fat as muscle, and bone accounts for only a small percentage of the carcass. This is the same for most other meat animal species (beef, sheep, swine, etc.).

Eventually, muscle growth slows down and the animal becomes less efficient, depositing fat faster than muscle and bone. It is clear that as meat goats increase in age (maturity), which increases time on feed, there is an increase in total fat percentage (table 8.1). Goats at 45 pounds and under compared to 70 pounds and up (table 8.1) have a 2 percent increase in total muscle, while those same goats have an 8 percent increase in total fat. Although both muscle and fat are increasing, fat tends to increase at a more rapid rate. This does not imply that all heavy weight (large frame) meat goats will grow to become fat; it also does not mean that all small framed goats will grow to become lean. It does reveal that meat goats have similar growth characteristics as other meat animal species. If we compare the fat thickness from the heaviest group (70 pounds and up) with what we normally see in other species, goats have a tendency to be much leaner (less fat cover at the 13th rib). Excessive fat in most species is considered waste and is trimmed and discarded at the packing plant. The total fat percentages in table 8.1 would not be considered excessive for any of the weight categories. Meat goats that have more frame tend to grow to heavier weights and still maintain a lean carcass, while some meat goats (smaller frame) may finish



out at lighter weights. The key is selecting a meat goat that finishes in the time you have to prepare for your fair, exposition, or specific market.

How Fat Is Your Meat Goat?

(Determining degree of finish on your meat goat)

When handling your meat goat, you should know the proper location that fat thickness (degree of finish) is measured. Locate the 13th rib (last rib) and then locate the back bone. About 1 inch from the backbone at the 13th rib is where fat is measured on a meat goat carcass. Handling your goat in this region, as well as along the loin edge and lower rib, gives you an idea of fat cover. Evaluating fat cover takes some practice, so seek some guidance when you are first learning to make sure your estimation is realistic and accurate. You can use the information in table 8.1 as a guideline for your estimation. When you initially purchase your project animal, you should handle your meat goat to determine its initial fat cover. Each week thereafter, you should continue to handle your meat

goat to determine the amount of finish. This gives you an idea about the progress that your meat goat is making relative to being ready for market (show). If your goat is not finishing out well (is too lean) or is too fat, adjustments can be made in its diet to improve fat deposition or leanness. Seek help if you are concerned about the progress of your meat goat. Both health and nutrition can have an effect on meat goat growth and development.

As stated above, when there is an increase in weight in your meat goat, there is a subsequent increase in the percentage of muscle (table 8.1). Likewise, the increase in total muscle is due to an increase in shoulder, rack, loin, and leg wholesale cuts (table 8.2). There is still some question about the ideal carcass weight in the meat goat industry. Recommendations on the ideal live weight, carcass weight, and fat thickness at time of harvest will develop as the meat goat industry continues to develop. Using information about other species (lamb, pork, and meat) and using current information on meat goat production provides us the targets and guidelines for meat goats.

Table 8.1. Projected carcass traits expected for various live weights.

Live Weight (lb)	Carcass Weight (lb)	Rib Eye Area (sq. in.)	Back Fat at 13th Rib (in.)	Total Primal Cut (%)	Total Muscle (%)	Total Bone (%)	Total Fat (%)
Below 45	19	0.88	0.04	64	43	32	5
45 to 49	22	1.00	0.04	66	43	31	6
50 to 54	25	1.13	0.03	65	44	30	7
55 to 59	27	1.27	0.04	66	44	28	9
60 to 64	29	1.27	0.05	66	45	26	9
65 to 69	32	1.37	0.06	67	45	25	11
70 and up	40	1.60	0.07	67	45	25	13

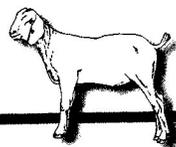


Table 8.2. Projected wholesale cut weights for carcasses of meat goats at different live weights (data unpublished).

Live Weight (lb)	Carcass Weight (lb)	Shoulder (lb)	Rack (lb)	Loin (lb)	Leg (lb)	Wholesale Cuts (%)
Below 45	19	3.8	1.7	1.6	4.84	63
45 to 49	22	4.6	1.8	2.4	5.44	65
50 to 54	25	5.2	2.2	2.6	6.21	65
55 to 59	27	5.6	2.4	3.2	6.90	67
60 to 64	29	6.2	2.4	3.4	7.18	66
65 to 69	32	6.6	3.0	3.8	8.28	68
70 and up	40	8.2	3.8	4.6	10.06	67

Meat Goat Products

The popularity of goat meat is on the rise. As the ethnic population has grown, so has the demand for chevon (goat meat) products. Rising demand has not been met with increased numbers of specialty meat markets, small butcher shops, farmers' markets, and open air markets.

When you are actively enrolled in a food animal project, you must understand not only food animal quality assurance, but also your target market. This chapter introduces you to chevon consumers and the times of year when demand is the greatest.

Ethnic Markets

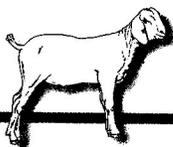
With an increase in the diversity of ethnic markets, anyone who raises goats, including 4-H members, should think about all possible marketing options. Many ethnic and religious groups want meat from goats that have been harvested under very specific guidelines. People with religious beliefs in either Islam or Judaism are forbidden to consume products that do not meet the criteria stated in the specific

religious doctrines. Products for Islamic consumers must meet *halal* criteria; products for Jewish consumers must meet *kosher* criteria. Although Islamic and Jewish groups are not the only consumers of chevon products, they represent a large segment of the market.

Halal

The meat Muslims eat must be halal, that is, permitted or lawful under Islamic guidelines. Some food sources, such as swine and swine by-products, are not considered halal under any circumstances. Does, goats, and chickens are all halal, as long as they are harvested and prepared in ways that meet halal requirements. Food that cannot be consumed because it does not meet halal standards is called *haram*.

Every Muslim male must know how to harvest an animal so that its meat is halal. In order for chevon products to meet halal standards, a Muslim male recites a prayer to Allah (Islamic God) as he conducts the harvest, helping to reinforce the idea of care and concern for animals. This also serves as a reminder that animals are to be treated humanely and respected as a source



of food provided by Allah. The animal is to be harvested in the quickest, most painless way, and the blood must be allowed to drain from its body. Chevron harvested under the rules of Islam and labeled as halal is acceptable by the Muslim consumer. If you are interested in producing goat meat products for this growing market, you should learn more about halal standards.

Kosher

According to Jewish law, a land animal is kosher if it has cloven hooves and the ability to chew a cud. In a procedure called *shechitah*, an animal is harvested by a professional called a *shohet*, who cuts its throat. This is considered humane because rapid blood loss causes the animal to lose consciousness immediately. After harvest, the animal must be drained completely of blood and inspected for any disease. (Kosher law requires that animals be free of disease at the time of harvest.) Any animal harvested in a way that varies from this procedure is not considered kosher.

The shohet must be well trained in Jewish law. In smaller Jewish communities, the shohet and the rabbi (church leader) are the same person. About 25 to 30 percent of all Jews in the United States “keep kosher,” following strict kosher guidelines for the food they consume.

There are a growing number of American consumers who share these beliefs relative to animals. Although people in this group may not practice other aspects of the religion, they support the restrictions for the harvest process—generally seen as more humane—and have chosen to consume only products that are labeled halal or kosher. This is another example of consumers exercising the power of demand.

Hispanic and Latino Markets

Not all specialty markets for chevon are religion-based. Growing Hispanic and Latino populations in the United States are also contributing to increasing demand. In Spanish, goat meat is called *cabrito*, and it typically refers to a goat carcass that weighs 15 to 30 pounds and that is desirable for roasting on an open spit.

When to Market Chevron

After a market has been identified, the next step is to know when those consumers want chevon. There are holidays specific to certain ethnic groups in which chevon is the desired meat. Table 8.3 is a chart listing holidays to target when marketing your goats. Targeting your goat’s birth, nutrition, and desired weights to meet these dates can prove profitable.

Meat Cut Specifications for Chevron

Specifications for goat meat products and chevon is a relatively new area being addressed by the United States Department of Agriculture (USDA). With other meat products, there are specific standards that build uniformity as to how a carcass should be broken down into wholesale, primal, and sub-primal cuts. There is limited information on a uniform standard carcass breakdown for the goat industry. However, in October 2001, USDA put into effect Institutional Meat Purchase Specifications (IMPS), which set the standard for uniformity from one meat packing operation to another on how to break down a goat carcass. In addition to the specifications for each cut that is derived from the goat carcass, there is specific terminology relating to chevon, differentiating it from other species.

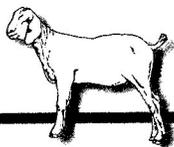


Table 8.3. Ethnic-based holidays and desired weights to use in marketing.

Holiday	Month Holiday Generally Observed	Specifications
Western or Roman Easter	April	3 months old or younger, 20 to 50 lb milk-fed kids (optimum 30 lb)
Eastern or Greek Easter	April	3 months old or younger, 25 to 55 lb milk-fed kids (optimum 35 lb)
Dassai	October	Size, weight, and type of goat depends on number to be fed
Ramadan	September	Male or female kid under 12 months of age, 45 to 120 lb (optimum 60 lb)
Id al Fitr	October	Male or female kid under 12 months of age, 45 to 120 lb (optimum 60 lb)
Id al Adha	January	Yearlings 12 to 24 months and free of blemishes or large kids, 60 to 100 lb

Source: Based on information from the University of Maryland and Cornell University. These are only a few of the holidays for which chevon is highly sought after. For more information go to <http://www.sheepgoatmarketing.info/>.

Each processor who is using the IMPS certified process must be concerned with quality assurance. With regard to 4-H projects, we often look at quality assurance as food safety. The emphasis of the IMPS quality assurance guidelines is on the process of producing a product (in this case chevon) that meets a certain cut specification. Furthermore, under the quality assurance guidelines, IMPS lists the condition of the product, lean quality, and workmanship (including cutting, trimming, boning cuts, and fat trim). A processor must be certified through USDA in order to advertise that they and their products are IMPS certified.

Why is this important? Most meat products from established species in production agriculture in the United States are processed in IMPS certified operations. Chevon is not. Yet as consumer demand for chevon increases, commercial meat operations will need to adopt a quality assurance-based cut specification program

(as defined in the IMPS guidelines) specific to chevon. The IMPS has listed various styles of goat carcasses based on weight and market type (table 8.4).

According to the IMPS, a goat carcass can be broken down into four wholesale cuts, which are then broken down into numerous retail cuts. The shoulder, rack, loin, and leg (sirloin) make up the majority of the goat carcass. These four wholesale cuts are similar to those found in the lamb carcass. The foresaddle consists of the shoulder and rack, as well as minor cuts such as the foreshank and breast, and comprises 52 percent of the carcass. The hind saddle, which includes the loin and leg, as well as minor cuts in the flank, comprises 48 percent of the carcass. Refer to table 8.2 for the projected weights of wholesale cuts from meat goat carcasses of varying live weights.

Shoulder

The shoulder (figure 8.4) is removed from the rack between the 4th and 5th rib. The

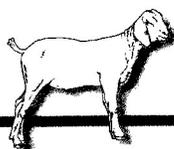


Table 8.4. Goat carcass type for specific market needs.

Goat Carcass Type	Recommended Weight (lb)	Description
Platter Style	20 or less	Intended as a style for smaller framed goats such as pygmy goats, and served whole after cooking.
Roasting Style	15 to 30	Intended for small to medium size goats with sufficient weight for use in the Cabrito market.
Barbeque Style	20 to 40	Intended for medium sized goats and ideal for making cuts that are to be grilled during the peak goat eating season. The entire carcass is fabricated into one-inch chops.
Food Service Style	30 to 40	Intended for medium to large sized goats to prepare for retail cuts that are more attractive to the food service industry.
Hotel Style	40 or more	Intended to produce cuts from larger sized goats that are similar to retail cut lamb.

Source: USDA Institutional Meat Purchase Specifications for Fresh Goat, Series 11, Agriculture Marketing Service.

front leg (trotter) and breast are removed at a line parallel to the back bone starting at the point of attachment for the 1st rib and cartilage of the sternum. The neck is removed one inch from the base of the neck perpendicular to the neck direction. The arm chop (figure 8.5), is a common retail cut originating from the square-cut shoulder which is great for grilling, broiling, or braising. The shoulder (un-split) is roughly 20 percent of the carcass.

Rack

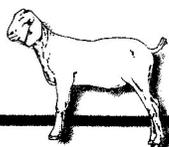
The rack (figure 8.6) is removed from the shoulder at the 4th and 5th rib. It is then removed from the loin after the last rib (immediately posterior to the 13th rib). The rib ends are removed 4.0 inches from the tip of the back strap (loin muscle/loin eye). The end result is a 9 rib rack. A common retail cut originating from the rack is a rib chop (figure 8.7), which is great from braising, broiling, or grilling. The rack (un-split) is roughly 9 percent of the carcass.

Loin

The loin (figure 8.8) is removed from the rack leaving the last rib on the rack (immediately posterior to the last rib, which is the 13th rib). The loin is then removed from the rear attachment just in front of the hip bone at the loin-sirloin junction. The flanks are removed parallel with the back 2.0 inches from the tip of the back strap (loin muscle/loin eye). The loin chop (figure 8.9) is a common retail cut taken from the loin and is great for grilling, braising, or broiling. The loin (un-split) is roughly 8 percent of the carcass.

Leg

The full leg (figure 8.10) is separated from the loin at the loin/sirloin junction without exposing the hip bone. The tip of the leg bone is removed just above the hock. A common retail cut originating from the leg is the center slice (figure 8.11), which is ideal for grilling. The leg (un-split with the sirloin) is roughly 26 percent of the carcass.



Wholesale Cuts of Chevon



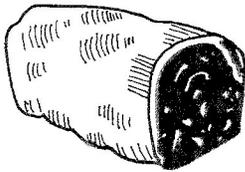
Arm Chop



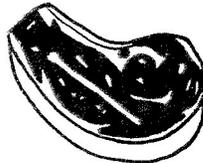
Fore Shank



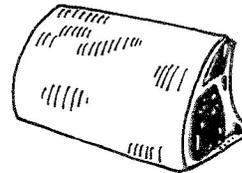
Breast



Rolled Shoulder



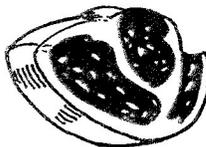
Blade Chop



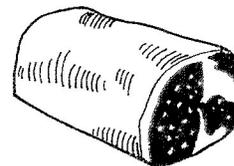
Rib Roast



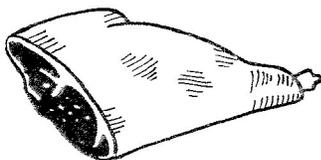
Chop



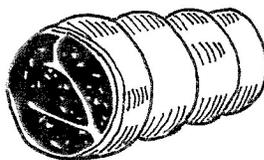
Loin Chop



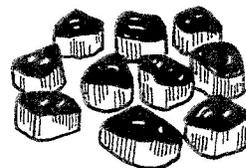
Loin Roast



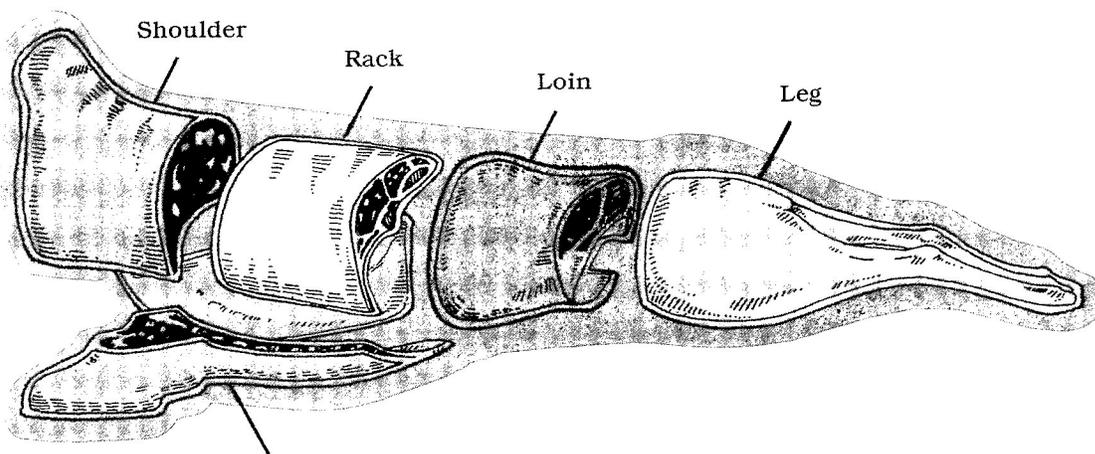
Leg, Sirloin Off



Rolled Leg



Stewed Cubed



Shoulder

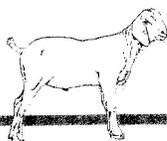
Rack

Loin

Leg

Fore Shank/Breast

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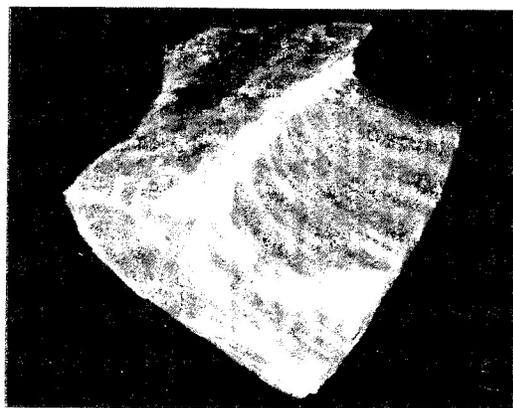




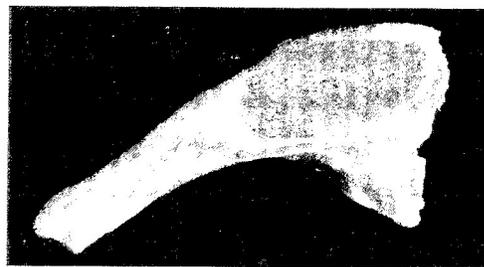
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Figure 8.4. Shoulder.



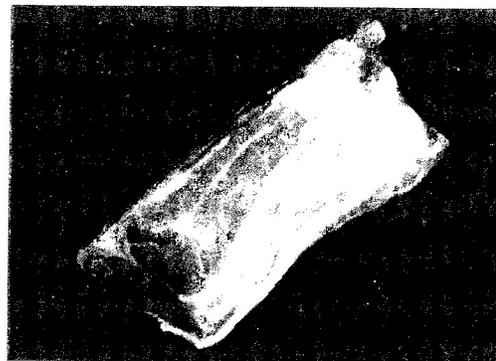
Department of of Animal Sciences, The Ohio State University.
Figure 8.5. Arm chop.



Department of of Animal Sciences, The Ohio State University.
Figure 8.6. Rack.



Department of of Animal Sciences, The Ohio State University.
Figure 8.7. Rib chop.



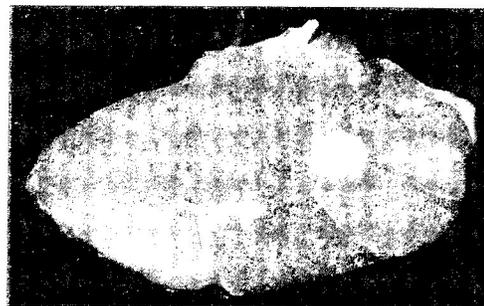
Department of of Animal Sciences, The Ohio State University.
Figure 8.8. Loin.



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Figure 8.9. Loin chop.



Department of of Animal Sciences, The Ohio State University.
Figure 8.10. Full leg.



Department of of Animal Sciences, The Ohio State University.
Figure 8.11. Center slice.



Summary

As the popularity of chevon and cabrito continues to rise, it is likely that consumers will soon have goat meat products at their disposal in the mainstream retail meat case. Promoting chevon and building consumer awareness of goat meat products assures there is an active market that sustains meat goat production locally and nationally. Because the goat industry is relatively new in the United States, innovative ideas for expanding the market are welcome and necessary. As 4-H members taking goat projects, you can have an impact on this emerging market.

