Market Goat Knowledge Test Study Materials

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Animal Welfare

Facilities and Components of Living Space

When preparing to bring your goat project home, it is important to think about where you will keep your project. Goats require a covered building to escape any poor weather conditions that may arise and an outside pen for light exposure. There are several factors that need to be included to provide a sufficient facility for your goat project such as: electricity, ventilation, flooring and bedding, storage, convenience and accessibility, and waste disposal.

Electricity

Electricity is important to have for lighting, fans, and blower connections. Outlets should be in a safe location - out of goat's reach to eliminate the potential hazard of extension cords running across the ground.

Ventilation

Proper ventilation in your facility can greatly reduce the risk of respiratory diseases that can affect your goat. Ventilation can also help keep your goat cool in the hot summer days. Good ventilation and ensuring your pens are clean and dry will significantly decrease the number of flies and smell of ammonia in your facilities.

Flooring and Bedding Type

Try to avoid slick surfaces in the walkways or aisles of your facilities. If you have a slick surface, consider putting rubber mats down to provide a surface that is safe and provides more traction for your livestock. Bedding for your sheep can be as simple as dirt or sand, as long as your animal is staying dry and comfortable. Wood shavings, straw, or bean stubble can be other options as bedding for your sheep. It is important to be cautious when using some of these options as they may contain mites that will heavily affect your sheep if unnoticed.

Storage

It is important to consider having adequate dry storage space to put feed, equipment, and supplies. Feed and hay should ideally be kept in a separate secure area closed off from the rest of the barn to aid in keeping rodents away from the feed and hay, preventing mold growth, and maintaining quality. To keep moisture out of an open bag of feed, it may be helpful to roll the top of the bag down to close it.

Drainage

Proper drainage is important so that water or urine does not build up in and around the barn. Standing water in and around the barn promotes a favorable environment for pests and bacteria growth, which can be harmful to you and your beef project. It may be beneficial to have your feeding facilities on higher ground for drainage purposes.

Convenience and Accessibility

It is important to think about the accessibility of your facilities during poor weather conditions. It may also be beneficial to think about if trucks and trailers are likely to get stuck trying to access your facilities in the case of transporting.

Waste Disposal

Having a place to make a compost pile away from the livestock is key in the waste disposal. Manure is also a fly attractant which is why it is important to keep disposal a good distance from the living facilities of your livestock project.

Fencing

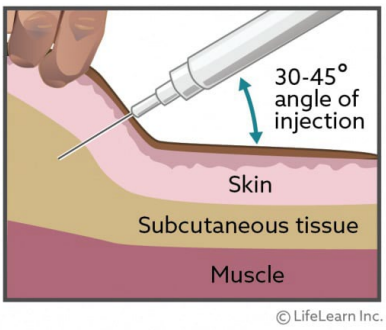
Fencing for your goat pens is a very important aspect to provide for your goat project. Fencing should be at least forty-two inches high and be predator proof to ensure a safe enclosure for your goat that they won't easily jump over. It may be beneficial to cover fencing with mesh to keep your goat from getting their heads stuck in the fence. To avoid any unwanted injury, stay away from barbed wire fencing or protruding wires.

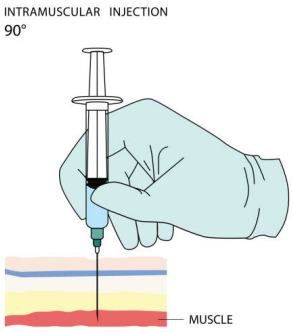
Administering Medications

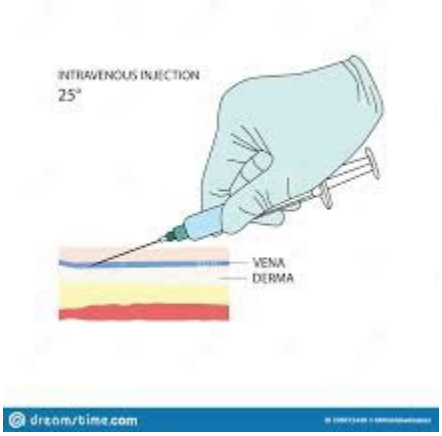
To ensure your projects stay healthy and happy, it may be beneficial to implement proper health care and management to prevent and treat if needed. For your goat project, it is important to have scheduled administrations of vaccines and deworming. When dealing with any medicine or medically treated feed, always follow the treatment recommendations on the bottle and consult with your veterinarian before treating. Always be aware of the withdrawal time on any medications given to your goat project to ensure a safe product for consumers after slaughter.

<u>Vaccines:</u>

When a vaccine is used correctly, it will increase an animal's resistance to disease. Always remember to read the vaccine label thoroughly prior to administration to ensure proper use of any medications. Vaccine injections should be given as described on the label. Injection sites include intramuscular (IM; in the muscle), subcutaneous (SQ; under the skin), and intravenous (IV; in the vein [only given by veterinarians or when instructed by veterinarian]). Intramuscular and intravenous injections should be given in the neck area and subcutaneous injections should be given in the flank.







<u>Oral Medications:</u>

The use of medications through an oral route is an important aspect of keeping your animal healthy. To provide anti-parasitic drugs orally to your goat, the use of syringes with no needle or drenching guns are often used. Learning the correct way to administer oral medications is key to your goat as they should be wormed multiple times throughout the year. Proper placement of the drench gun will ensure the animal's swallow reaction is triggered to keep drench from entering the trachea. The drench gun can be placed on either side of the mouth, but never in the front. The drench gun should be placed over the back of the tongue and medication should be administered gradually. Administering gradually and holding the animal's head slightly elevated will help reduce risk of drench running out of the animal's mouth.

Modified from Texas 4-H Explore Book Series - Sheep and Goat

The 5 Freedoms

1) Freedom of Hunger and Thirst
    a) By ready access to fresh water and diet to maintain full health and vigor
2) Freedom from Discomfort
    a) By providing an appropriate environment including shelter and a comfortable resting area
3) Freedom from Pain, Injury, or Disease
    a) By prevention or rapid diagnosis and treatment
4) Freedom to Express Normal Behavior
    a) By providing sufficient space, proper facilities and company of the animal's own kind
5) Freedom from Fear and Distress
    a) By ensuring conditions and treatment which avoid mental suffering

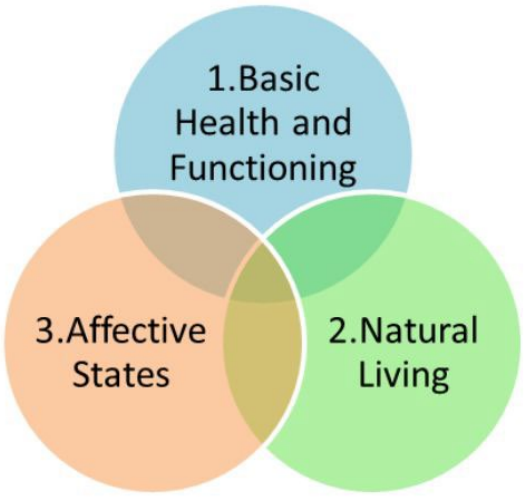
Modified from MSU Extension The Five Freedoms: A history lesson in animal care and welfare

Animal Health and Well-Being

Animal well being/animal welfare is the ability of an animal to cope with its environment and living conditions. Well-being includes an animal's ability to perform natural behavior, an animal's health and biological functioning, and an animal's feelings or emotions.

Three Circle Model of Animal Well-being

1. Basic Health and Functioning
   The basic health and functioning concept addresses the physical fitness of the animal. THis includes good health, normal body function, and normal growth and development. Circle 1 relates closely to freedoms from hunger and thirst (Freedom 1); discomfort (Freedom 2); and pain, injury, and disease (Freedom 3).
2. Natural living
   The natural living circle emphasizes that animals should be able to lead reasonably natural lives. This includes the ability to perform important, natural behaviors and to have some natural elements in their environment. Circle 2 relates closely to the freedom to express normal behavior (Freedom 4).
3. Affective states
   The affective states circle considers the emotional state of the animal. Animals should feel mentally well and not be subjected to excessive negative emotions that can cause unreasonable stress. Negative emotions may include pain, hunger, and distress. Animals should be able to experience positive emotions in the forms of pleasure or contemptment through play or social contact. Circle 3 relates closely to the freedom from hunger and thirst (Freedom 1); pain, injury, and disease (Freedom 3); and fear and distress (Freedom 5)



Signs of Poor Well-being

Most times you can notice signs that your animal is either sick or in pain. These are some of those signs to look out for when checking your animals; being less social than usual, eating and drinking less than usual, inactivity, inability to get up from a lying position, using the same area for resting and defecating/urinating, huddling, shivering, sleeping, and resting more than usual, dull, dirty skin, dull eyes, discharge from the eyes, nose or other areas, vomiting, and any other injuries or sores anywhere on the body.

Causes of Poor Well-Being

Goats are not in control of their environment and therefore are dependent on actions that are or are not taken by their caretakers. Humans can have a negative effect on swine in many ways : neglect, cruelty or abuse, abandonment, and crowding.

1. Neglect: Failing to care for an animal. Not providing adequate food or water. Restraining the animal in a way that causes pain or endangers health. Ignoring illness, injury or disease, and not providing veterinary care.

2. Cruelty or abuse: Causing physical harm and/or pain to the animal , such as prolonged periods of thirst, hunger, or restraint and immobility.

3. Abandonment: Deserting swine without providing means for long-term care.

4. Crowding: Not providing sufficient room, especially room to stretch and turn around fully.

Feeding and Feedstuffs

Importance of Water

Water is the single most essential nutrient your livestock project(s) require in their diet. If your project does not have access to water their body will be unable to maintain itself. It is very important that you supply your project with clean, fresh water at all times. Your goat project normally drinks about 2-3 gallons of water a day depending on what feed is provided and nutrient requirements. It is important to consider how much water your animal will need when giving them a watering system in their living quarters. Your project may require more water depending on different influences including diet, temperature, climate, age, level of production, and even breed. In the hot summer months, it is important to remember to provide your goat project with fresh, cool water everyday to help them regulate their body temperature and stay cool in the hot temperatures.

Feed Rations

Goats are ruminant animals, meaning they have a four-compartment stomach (see pg.15). Ruminant animals have an advantage because they are able to ferment forages at the beginning of the tract. This process of fermentation may cause problems if the animal is overfed diets that are high in starch (e.g., corn or other grains). Goats rely heavily on forages, like hay, to get essential nutrients and to ensure a healthy rumen. If your goat project is fed too much grain and not enough forage, it could get acidosis and bloat (see pg.17). Common components of a feed ration for your goat project may include but are not limited to: oats, corn, barley, soybean meal, cottonseed hulls, grass hays, alfalfa, and/or molasses.

When it comes to deciding on a feed for your goat project, there are a few nutrient requirements within the ration you should look for to supply your project with a good feed. These components include proteins, energy, vitamins and minerals, and water (see pg 8 for Importance of Water).

Proteins

Goats require the consumption of proteins to utilize the amino acids they contain for synthesis of the muscles, blood proteins, and other body components. This process is an important function of the cells within your goat project. Examples of protein in your ration may include; forages, grasses, barley, corn, oats, and soybean meal.

Energy

Your goat project needs to consume feedstuffs that will provide them with energy to go about their everyday lives. Energy is required to graze, traveling, temperature maintenance, digestion, and voiding of body wastes. Goats do not require a lot of cereal grains as forage and hay are their main energy source. Examples of energy in your ration may include; corn, sorghum, barley, wheat, forages, hay and alfalfa.

Vitamins and Minerals

Vitamins and minerals though make a small part of your goat projects' ration, are very important to your project. They provide your goat with the nutritional needs they require for proper bone development, immune functions, nervous system function, and muscle contractions. Vitamins and minerals you may see in your ration include calcium, magnesium, phosphorus, potassium, sodium, chlorine, sulfur, copper, iodine, iron, manganese, nickel, selenium, and zinc. It may be necessary to supplement your goat project's feed with added vitamins and minerals by providing a salt or mineral block to their pen to consume at their will. Goats are prone to be copper deficient so ensure that your project has enough copper in their diet.

Good Feedstuffs vs Bad Feedstuffs

The quality of feedstuffs you provide your goat project will heavily affect your projects' performance, disease resistance, and health. Low-quality feedstuffs can contain pathogens that may be extremely harmful to your goat project. These pathogens can easily be passed from your goat project to you, low-quality feedstuffs may also contain harmful components that may also cause harm to you. Not only is it important to provide your livestock with the necessary nutrients, it is important to select a feed that is of good quality for your project, you, and consumers.

Providing a quality feed is important to ensure your project is receiving all the essential nutrients from their feed as possible. Bad feed may be stale, moldy, contain too much moisture, or have an unappetizing taste to your animal. Good feed will be high in nutritional content, have good flavor, will be appetizing in appearance, and will smell fresh.

The quality of roughage you provide your goat project is another factor that will affect your project. Bad roughage may be dusty, moldy, contain thistles or large stems, contain a small amount of leafy bits, or be faded in color. Good roughage will be leafy, bright green, contain small stems, smell fresh, and be free of dust, mold, and foreign objects.

The difference between feeding good feedstuffs versus bad feedstuffs may be minimal sometimes, but it may also be drastic. Feeding low-quality feedstuffs can result in poor appetite, a higher feed conversion ratio, slow growth, and may even lead to death of your livestock. For these reasons, it is important to always trust in the feedstuffs you are feeding your project, and to know where the ingredients are being sourced from. If you plan to switch the feed your livestock is eating, it may be helpful to do some research to ensure it is a high quality feed that you can trust will be good for your project.

Modified from Triple L Feed & Supply: The Importance of High Quality Livestock Feed

Reading Feed Tags

Nutrition is one of the most important things to have a successful 4-H livestock project. Understanding feed tags will help to make sure that your animals are getting the proper nutrition for the requirements that they need. The following list is the information that will be on a feed tag and a description of the item.

Product Name and Brand Name: This will always be on the label and generally has an unique name for it

Purpose of Feed: This will explain which species and stage of production the feed is meant for. (Growing/Finisher Ration)

Medication and Active Drug Ingredients: This will not always appear in the feed tag. It will only appear if the word MEDICATED is below the name. Along with that it will state the purpose of the medication, list of active ingredients, and amount of medication within the feed.

Guaranteed Analysis: This will display the main ingredient percentages. Some of the more predominant percentages that will be present is minimum percent of crude protein (crude protein is determined by multiplying the nitrogen content of a feed by 6.25), minimum percentage of crude fat (fat has an energy value around 2.25x the value of carbohydrates), maximum percentage of crude fiber (this is a measure of the indigestible or non-useful portion of a feed, a lower crude fiber is more desirable), minimum and maximum percentage of calcium, minimum percentage of phosphorus, minimum and maximum percentage of salt, and minimum vitamin A in International Units (IU) per pound.

Ingredient Statement: This is the list of ingredients used to make the feed. The list will always go in order of highest concentration/amount to lowest.

Feeding Instructions: Directs how the product should be fed.

Warnings and Cautions: This will only be on the label if the feed is medicated.

Distributor Name and Address: This tells you the name of the company that is either making the feed or distributing it.

Net Weight: This tells you the weight of the feed in the bag.

Modified from University of Idaho Extension Feed Labels

Feed Efficiency

Feed conversion ratio (FCR) is defined as a measure of an animal's efficiency to convert feed into increased body mass. You want a lower FCR. When the FCR is lower this tells us that the animal needs less feed to get a heavier weight. The average FCR for goats is 4.5:1 - 5:1. This states that it takes goats on average 4.5 pounds of feed to create a 1 pound increase in body weight on that animal. The formula for FCR is Feed intake/Animal weight gain.

Average Daily Gain (ADG) is defined as the average amount of weight a market animal will gain each day during the feeding period. You want a higher ADG. This states that your animal gains more per day possibly compared to other animals. The formula for ADG is the weight of the animal/number of days on feed.

Example Problem: You fed your buck 47 lbs of feed and as a result it gained 10 lbs. What is the FCR of your buck?

FCR = 47 lbs of feed/10 lbs gained
FCR = 4.7 or 4.7:1

Example Problem: A doe weighs 115 lbs at 10 months of age. What is the ADG of this doe?

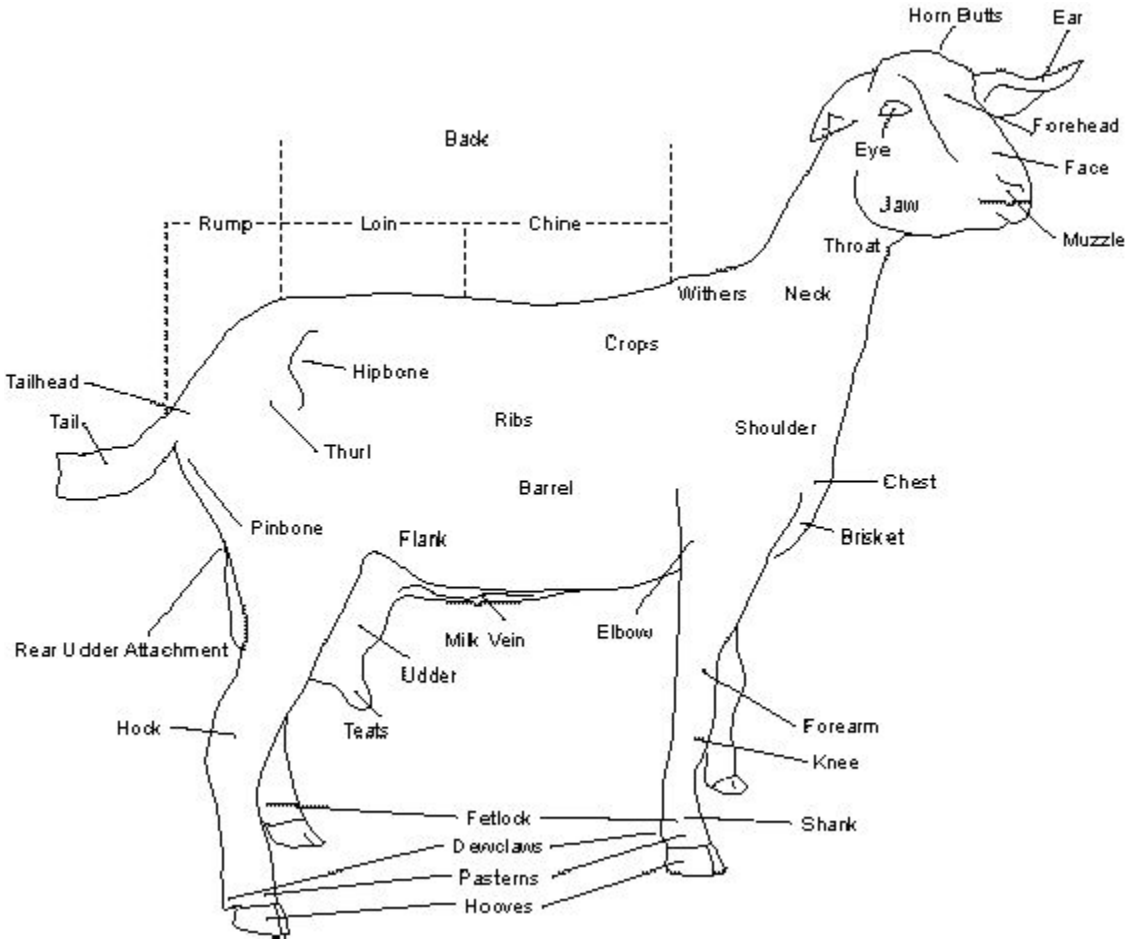
ADG = 115 lbs/(365 x 0.83) = 303 days
ADG = 115 lbs/ 303 days
ADG = 0.37 lbs per day gained

Some factors that could impact these numbers are genetics, age of the animal and quality of feed. Genetics can cause a difference as certain breeds have higher growth rates compared to other breeds. The age of the animal will have an impact as younger animals have a quicker growth rate compared to older animals. Quality of feed can determine a lot for your livestock project. If you have a poor quality feed they will not gain weight and get the required nutrients that are needed for that animal.

Modified from NavFarm, The Ultimate Guide to FCR

Anatomy

Parts of the Animal



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Meat Cuts

Things to know about the meat product from livestock:

1. Dressing Percentage (DP) : Determined by the quantity of carcass weight (HCW) divided by live weight (LW) multiplied by 100
    a. Example: LW = 80 lbs and HCW = 40 lbs What is the DP?
    DP = (40 / 80) x 100 = 50% (This is the average DP for goats)

2. Goat meat is highly sought after for religious celebrations all across the world. Muslim, Jewish, and Christian holidays are most popular. Goat meat is also enjoyed by Caribbean, Hispanic, and Chinese ethnicities as well. Goat meat is called Cabrito or Capretto. Different weights are desired by different religions.

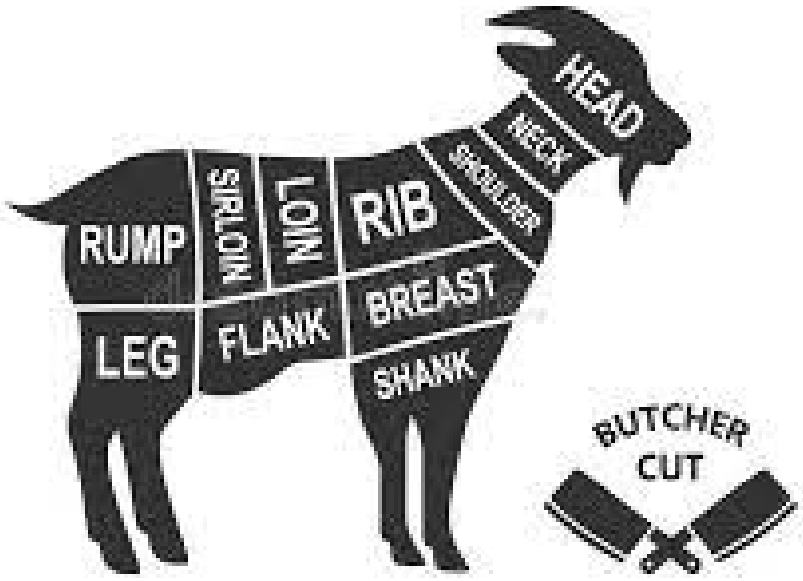
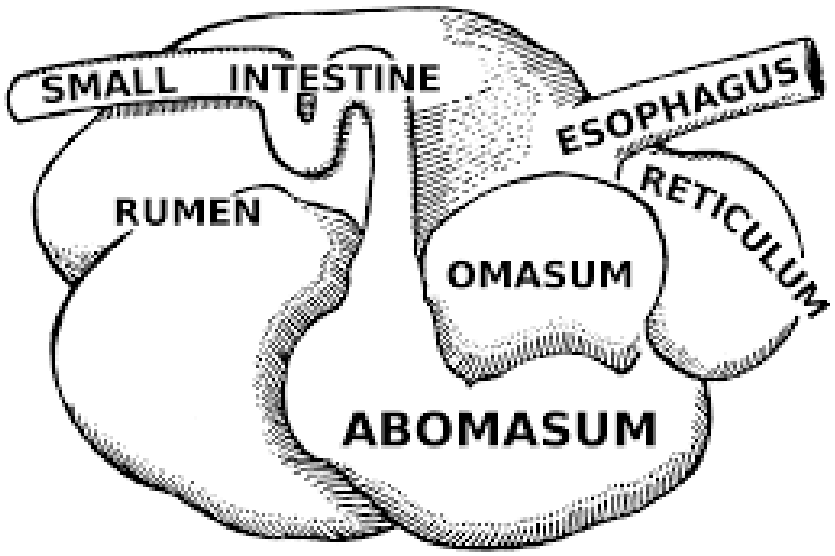


Image Imported from Dreamstime.com and Modified from NC State Extension: Consider Breeding Your Does to Target Ethnic Holidays Where Goat Meat Is Part of the Traditional Holiday Feast

Interior Anatomy

Goats are ruminant animals, meaning they have a four-compartment stomach. The four compartments are named: the rumen, the reticulum, the abomasum, and the omasum. In the process of digestion, contents will pass through the rumen first. The rumen is the largest compartment of the stomach and is where ingested feed is broken down or fermented by bacteria and fungi that live in the rumen (ruminal microbes). Fermentation results in the production of the primary energy source and the primary protein source for ruminant animals. Ruminant animals depend on the bacteria and fungi in the rumen to be able to survive on diets that contain large amounts of fibers like grass. The next compartment of the stomach is the reticulum. The reticulum catches and traps foreign objects that may have been ingested by the animal. The reticulum also plays a role in a process where feed is regurgitated (returned to the mouth), re-chewed (this substance is often referred to as cud), and re-swallowed. The third section, the omasum, is primarily involved in water absorption and nutrient absorption. The fourth and final compartment is the abomasum, commonly referred to as the “true stomach”. This compartment closely resembles the functions of a human stomach. Partially digested food will continue to be broken down and digested in the abomasum.



Modified from Texas 4-H Explore Book Series - Beef

Structure

If possible, it is beneficial to pick a project that is structurally sound. Soundness refers to having correct structure within the animal's skeleton or body. It is important to take notice and understand any structural issues your sheep project may have. In some instances, you may be able to mask the structural issues your project may have, but only if you recognize and understand the issue.

Leg Structure:

Sickle-Hocked - When viewing the rear legs from the side of the animal, the hock has too much angle, which causes the animal to stand too far underneath themselves.

Calf-Kneed - This is the opposite of buck kneed, where the animal stands "back at the knees". When viewing the front legs from the side of the animal, the legs appear slightly hyperextended.

Pigeon-Toed - When viewing from the front of the animal, the legs appear correct except for the feet toe (point) inwards towards each other very noticeably.

Weak Pasterns - Weak pasterned is a term used to describe when a lamb has too much flex in the pasterns on their legs.

Buck-Kneed - Full extension of the knee cannot occur resulting in the animal being "over at the knees". When viewing the front legs from the side of the animal, the legs appear slightly bent.

Knock-Kneed - When viewed from the front of the animal, the knees will appear close together and the feet toe(point) out and away from each other slightly.

Splay-Footed - When viewed from the front of the animal, the legs will appear correct, but the feet toe (point) out and away very noticeably from each other.

Cow-Hocked - When viewing the hind legs from the rear of the animal, the hocks are turned inward or appear too close together, which causes the toes to turn outward away from each other

Post-Legged - The hock of the hind legs has too little angle. The animal is too straight through the joint in their hind legs, resulting in very restricted movement because they lack the flexibility within their legs.

Bowlegged - When viewed from the front or rear of the animal, the knees are set too far out, which causes the toes to turn inward towards each other slightly.

Jaw Structure:

Undershot (Parrot Mouth) - Parrot mouth is an inherited trait that results in the lower jaw being shorter than the top. This structure issue can interfere with the sheep's ability to gather food.

Overshot (Monkey Mouth) - Monkey mouth is an inherited trait that results in the lower jaw being too long causing the teeth of the lower jaw to be in front of the upper mouth pad. This structure issue can interfere with the sheep's ability to gather food.

Modified from Ohio State University Extension: 194R

Diseases and Disease Management

Common Species Diseases

When caring for your goat project, it is important to familiarize yourself with some of the diseases that are common to your project. Livestock can often get sick and show little symptoms, so ensuring you look closely at your animal everyday could be the difference between being able to help your livestock versus losing your livestock. Being able to recognize/diagnose, know how to treat, and know the prevention of these diseases is an important skill to obtain to care for your goat project.

Enterotoxemia: Also known as pulpy kidney or overeating disease. It occurs in young animals with a sudden change in feed from high carbohydrate diets or lush green pastures.

Signs/Symptoms: abruptly going off feed, lethargic, stomach pain, laying down and getting up, laying on their sides, diarrhea, may lose ability to stand, lay on their sides, and extent their legs
Treatment: Mild cases with analgesics and probiotics. Severe cases with intravenous fluids and antibiotics.
Prevention: Vaccinations and ensuring diets are not switched over quickly

Tetanus/Lockjaw: Tetanus is caused by toxins produced by a bacterium called Clostridium tetani. The bacterium can be found in soil and guts of animals and humans. The bacteria produce toxins which spread along the nerves to the brain of the animal.

Signs/Symptoms: stiffness and reluctance to move, twitching and tremors of the muscles, lockjaw, prominent protruding third eyelid, unsteady paces while walking with stiff held out tail, anxious and easily excited by sudden movements or handling, bloat, collapsing, and death.
Treatment: Usually unsuccessful but high doses of penicillin are given.
Prevention: Performing surgical procedures properly, in a clean environment, with sterilized instruments and area can reduce the risk of tetanus. A three dose course of vaccination can offer protection from tetanus for over three years.

Soremouth: This is a viral skin disease. It is caused by a Pox virus that requires a break in the skin to enter the body. Soremouth can get transmitted to humans.

Signs/Symptoms: Scabs or blisters on the lips, nose, udder and teats or sometimes around the hoof and lower leg. Can cause lack of eating and possibly mastitis.
Treatment: Can be treated topically with iodine/glycerin solution. It will also clear up within 1-4 weeks.
Prevention: Commercial vaccines are available and ensure a safe environment for your livestock so that they do not have a break in their skin (fencing).

Scrapie: Scrapie is a member of a family of diseases known as Transmissible Spongiform Encephalopathies (TSEs). These diseases are caused by an infectious

protein(prion) that is ingested and enters the lymphatic system(part of the immune system) and affect the central nervous system. Prions make their way to the brain where they cause “holes” in the brain giving it a sponge-like appearance.

Signs/Symptoms: weight loss, behavioral changes, excessive itching/rubbing, wool biting, loss of coordination, easily startled, tremors, swaying at back end, unable to stand, or death.

Treatment: There is no treatment.

Prevention: Since certain genes play a role in the development of scrapie, testing for resistance or susceptibility is the only way to prevent the spread of scrapie in your flock. Try to avoid introducing sheep from another farm that may be susceptible to scrapie.

Parasites: Parasites can be an internal or external threat to the animal. Goats are more susceptible to parasites than sheep. There is a system called FAMACHA that helps identify animals affected by some internal parasites. It observes the color of the lower eyelid to determine the level of anemia that the animal is experiencing.

Internal:

Barberpole worm: Goats can become infected by this gastrointestinal roundworm whose scientific name is *Haemonchus contortus*. It is a blood sucking parasite that reproduces easily through egg-laying.

Signs/Symptoms: Anemia, protein loss, death

Treatment: Anthelmintics (drug that either kill egg-laying adults or kill larvae before they grow into adults) Generally administered orally with a drench gun. Use the FAMACHA test to determine the use of anthelmintics.

Prevention: Ensure a clean environment.

Coccidiosis: Goats can become infected by a single-celled parasite known as coccidia when they are placed in contaminated environments. Poor hygiene, high stocking density, poor health and nutrition can contribute to a calf contracting coccidiosis.

Signs/Symptoms: diarrhea, depression, loss of appetite, weight loss, dysentery (blood in feces).

Treatment: Most cases do not require treatment. Treatment is better given to exposed animals who have not started showing signs.

Prevention: To control coccidia, good management and hygiene is key. Ensuring that pens are well drained and cleaned often will reduce the ability of the coccidia to thrive in the environment.

External: More common in the winter when they are in close confinement. Include ticks, keds, flies, and lice.

Signs/Symptoms: Damaged skin, hair loss, and excessive itching.

Treatment: Pour on topical treatment

Prevention: Maintaining a clean environment. Spraying insecticides for pests and parasites everyday can help lower the number of parasites in the environment.

Caseous Lymphadenitis (CL): This is a bacterial condition that impacts the lymphatic system. It can spread through the blood that could affect internal organs as well.

Signs/Symptoms: Abscess in the lymph node area or internally, anemia, anorexia, and fever.

Treatment: Wash abscess cavity with hydrogen peroxide and then flush it with an iodine solution. Keep away from the rest of the herd until abscess has fully healed.
Prevention: Vaccine is available in two forms. The vaccination does not treat existing infections.

Listeriosis: This is a bacterial infection that can come from the bacteria in the soil. Generally contract this by ingesting grazing grass with feces containing the bacteria.

Signs/Symptoms: anorexia, depression, facial paralysis, excessive salivation, abortions, and disorientation.
Treatment: High doses of penicillin or tetracycline with supplemental fluids and electrolytes.
Prevention: Good hygiene and sanitation on the farm.

Foot Rot: An infection that originates from a lesion in the interdigital skin (between the toes). Fusobacterium necrophorum is the major cause for foot rot. This organism, along with others, are often passed to the animal through feces.

Signs/Symptoms: severe lameness, holds leg in air to relieve pressure, swelling of interdigital space, fever, anorexia. Hind feet are most often affected causing cattle to stand or walk on their toes.
Treatment: Parenteral(injection) antibiotics administered for three to five days or antiseptic and bandage applied after cleaning and trimming the foot.
Prevention: Remove sources for injuries and keep feet clean and dry.

Rumen Acidosis: Occurs when the pH of the rumen falls to less than 5.5 (normal being 6.5-7.0). pH can fall for two reasons: the rumen stops moving, becoming atonic(sudden loss of muscle tone, limp) and a change in acidity changes the rumen flora with acid-producing bacteria taking over. Acidosis is caused by feeding a high level of rapidly digestible carbohydrates.

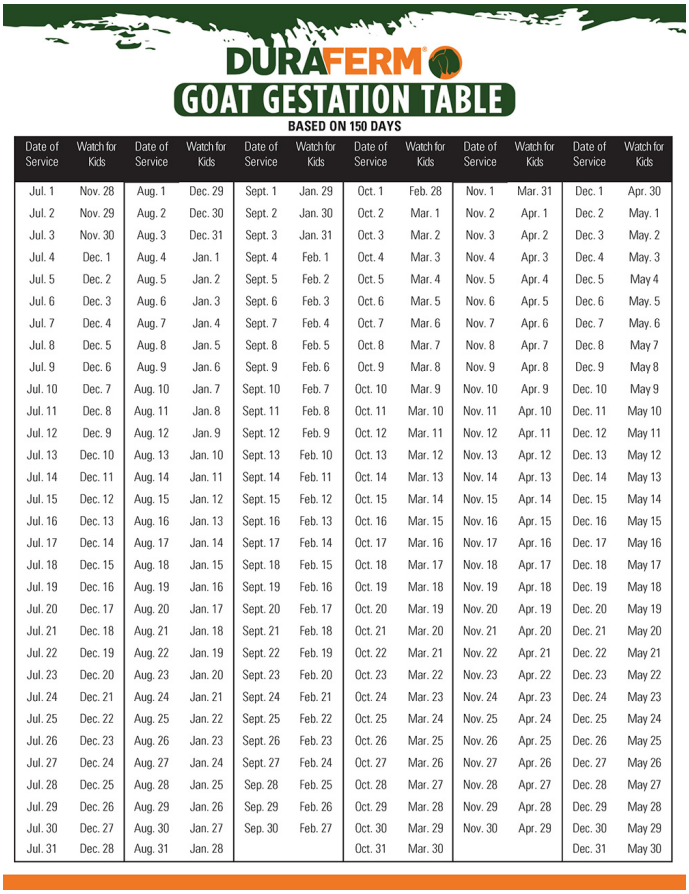
Signs/Symptoms: acute acidosis - liver abscesses, depression, decreased appetite, elevated heart rate, diarrhea, or death. Sub-acute acidosis - reduced feed intake, poor body condition and weight loss, diarrhea, temperature, pulse rate and respiratory rate may rise, lethargy.
Treatment: There is no treatment for ruminal acidosis, but secondary conditions may be treated as needed.
Prevention: Reduce the amount of readily fermentable carbohydrates(barley and other cereals) consumed at each meal.

Modified from Purdue Extension: Common Diseases and Health Problems in Sheep and Goats - AS-595-W

Breeding and Breeding Cycles

Gestation

Gestation refers to the process or period of time of fetal development inside the womb between conception and birth. A goat's gestation period or pregnancy lasts about 146-155 days or 4-5 months. There are many factors that can affect the length of gestation including: diet, number of kids, or a number of complications. Producers can use a table like this one as it provides a suspected due date for a doe determined by its service date or breeding date. This table is based on a 150 day gestation period.



DURAFERM

GOAT GESTATION TABLE

BASED ON 150 DAYS

Date of Service	Watch for Kids	Date of Service	Watch for Kids	Date of Service	Watch for Kids	Date of Service	Watch for Kids	Date of Service	Watch for Kids	Date of Service	Watch for Kids
Jul. 1	Nov. 28	Aug. 1	Dec. 29	Sept. 1	Jan. 29	Oct. 1	Feb. 28	Nov. 1	Mar. 31	Dec. 1	Apr. 30
Jul. 2	Nov. 29	Aug. 2	Dec. 30	Sept. 2	Jan. 30	Oct. 2	Mar. 1	Nov. 2	Apr. 1	Dec. 2	May. 1
Jul. 3	Nov. 30	Aug. 3	Dec. 31	Sept. 3	Jan. 31	Oct. 3	Mar. 2	Nov. 3	Apr. 2	Dec. 3	May. 2
Jul. 4	Dec. 1	Aug. 4	Jan. 1	Sept. 4	Feb. 1	Oct. 4	Mar. 3	Nov. 4	Apr. 3	Dec. 4	May. 3
Jul. 5	Dec. 2	Aug. 5	Jan. 2	Sept. 5	Feb. 2	Oct. 5	Mar. 4	Nov. 5	Apr. 4	Dec. 5	May 4
Jul. 6	Dec. 3	Aug. 6	Jan. 3	Sept. 6	Feb. 3	Oct. 6	Mar. 5	Nov. 6	Apr. 5	Dec. 6	May. 5
Jul. 7	Dec. 4	Aug. 7	Jan. 4	Sept. 7	Feb. 4	Oct. 7	Mar. 6	Nov. 7	Apr. 6	Dec. 7	May. 6
Jul. 8	Dec. 5	Aug. 8	Jan. 5	Sept. 8	Feb. 5	Oct. 8	Mar. 7	Nov. 8	Apr. 7	Dec. 8	May 7
Jul. 9	Dec. 6	Aug. 9	Jan. 6	Sept. 9	Feb. 6	Oct. 9	Mar. 8	Nov. 9	Apr. 8	Dec. 9	May 8
Jul. 10	Dec. 7	Aug. 10	Jan. 7	Sept. 10	Feb. 7	Oct. 10	Mar. 9	Nov. 10	Apr. 9	Dec. 10	May 9
Jul. 11	Dec. 8	Aug. 11	Jan. 8	Sept. 11	Feb. 8	Oct. 11	Mar. 10	Nov. 11	Apr. 10	Dec. 11	May 10
Jul. 12	Dec. 9	Aug. 12	Jan. 9	Sept. 12	Feb. 9	Oct. 12	Mar. 11	Nov. 12	Apr. 11	Dec. 12	May 11
Jul. 13	Dec. 10	Aug. 13	Jan. 10	Sept. 13	Feb. 10	Oct. 13	Mar. 12	Nov. 13	Apr. 12	Dec. 13	May 12
Jul. 14	Dec. 11	Aug. 14	Jan. 11	Sept. 14	Feb. 11	Oct. 14	Mar. 13	Nov. 14	Apr. 13	Dec. 14	May 13
Jul. 15	Dec. 12	Aug. 15	Jan. 12	Sept. 15	Feb. 12	Oct. 15	Mar. 14	Nov. 15	Apr. 14	Dec. 15	May 14
Jul. 16	Dec. 13	Aug. 16	Jan. 13	Sept. 16	Feb. 13	Oct. 16	Mar. 15	Nov. 16	Apr. 15	Dec. 16	May 15
Jul. 17	Dec. 14	Aug. 17	Jan. 14	Sept. 17	Feb. 14	Oct. 17	Mar. 16	Nov. 17	Apr. 16	Dec. 17	May 16
Jul. 18	Dec. 15	Aug. 18	Jan. 15	Sept. 18	Feb. 15	Oct. 18	Mar. 17	Nov. 18	Apr. 17	Dec. 18	May 17
Jul. 19	Dec. 16	Aug. 19	Jan. 16	Sept. 19	Feb. 16	Oct. 19	Mar. 18	Nov. 19	Apr. 18	Dec. 19	May 18
Jul. 20	Dec. 17	Aug. 20	Jan. 17	Sept. 20	Feb. 17	Oct. 20	Mar. 19	Nov. 20	Apr. 19	Dec. 20	May 19
Jul. 21	Dec. 18	Aug. 21	Jan. 18	Sept. 21	Feb. 18	Oct. 21	Mar. 20	Nov. 21	Apr. 20	Dec. 21	May 20
Jul. 22	Dec. 19	Aug. 22	Jan. 19	Sept. 22	Feb. 19	Oct. 22	Mar. 21	Nov. 22	Apr. 21	Dec. 22	May 21
Jul. 23	Dec. 20	Aug. 23	Jan. 20	Sept. 23	Feb. 20	Oct. 23	Mar. 22	Nov. 23	Apr. 22	Dec. 23	May 22
Jul. 24	Dec. 21	Aug. 24	Jan. 21	Sept. 24	Feb. 21	Oct. 24	Mar. 23	Nov. 24	Apr. 23	Dec. 24	May 23
Jul. 25	Dec. 22	Aug. 25	Jan. 22	Sept. 25	Feb. 22	Oct. 25	Mar. 24	Nov. 25	Apr. 24	Dec. 25	May 24
Jul. 26	Dec. 23	Aug. 26	Jan. 23	Sept. 26	Feb. 23	Oct. 26	Mar. 25	Nov. 26	Apr. 25	Dec. 26	May 25
Jul. 27	Dec. 24	Aug. 27	Jan. 24	Sept. 27	Feb. 24	Oct. 27	Mar. 26	Nov. 27	Apr. 26	Dec. 27	May 26
Jul. 28	Dec. 25	Aug. 28	Jan. 25	Sep. 28	Feb. 25	Oct. 28	Mar. 27	Nov. 28	Apr. 27	Dec. 28	May 27
Jul. 29	Dec. 26	Aug. 29	Jan. 26	Sep. 29	Feb. 26	Oct. 29	Mar. 28	Nov. 29	Apr. 28	Dec. 29	May 28
Jul. 30	Dec. 27	Aug. 30	Jan. 27	Sep. 30	Feb. 27	Oct. 30	Mar. 29	Nov. 30	Apr. 29	Dec. 30	May 29
Jul. 31	Dec. 28	Aug. 31	Jan. 28			Oct. 31	Mar. 30			Dec. 31	May 30

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Estrus Cycle

Estrus or “heat” refers to the period of time when the female animals are signaling they are ready for mating or breeding. Estrus is the result of estrogen (female reproductive hormone) being produced within developing follicles on the ovary. Ovulation occurs shortly after the beginning of estrus. Goats cycle into estrus seasonally, which is called seasonally polyestrous. The peak time for breeding happens in the fall when the day length is short so from August through January. The estrus cycle of goats lasts 18-22 days while estrus itself will last for 12-36 hours, and ovulation will last 12-36 hours after the end of estrus.

As a producer it is important to be able to recognize the signs of estrus to increase conception rates for the herd or flock. The primary sign of heat in goats is when a female stands immobile, often called “standing heat” allowing for breeding. Secondary signs may include: tail wagging, mounting, bleating. Looking for these signs is called heat detecting or heat checking. There are certain times when to heat check that would give you the best results when doing so. Generally it is checked twice a day and you want to do it at least 8-12 hours apart. Also heat checking during the cooler hours of the day is ideal.

Modified from NC State Extension: Basic Meat Goat Facts

Nutritional Needs

The nutritional needs of both the doe and the kid during gestation and after birth are very important to consider prior to breeding season in order to minimize complications related to breeding soundness and nutrition. In order to determine if a doe is ready for breeding, a quality check of livestock should be performed. A quality check should be conducted 2-6 weeks prior to breeding to ensure time to prepare the livestock for breeding season. While conducting a quality check, there are many factors to check in your livestock including: body condition score, up to date vaccinations, overall health, and weight.

Body condition scoring(BCS) is an important management practice that helps to optimize production, evaluate health, and assess nutritional status. By scoring body condition, you are evaluating the amount of body reserves an animal has. By using the 1-5 scale for goat body condition scoring, producers can accurately determine if their herd is in good condition to excel during the breeding season. Does should be at a BCS of 3 prior to kidding.

Body Condition Scores for Goats

Condition Score 1- Very Thin
Condition Score 2 - Thin
Condition Score 3 - Average or Normal
Condition Score 4 - Fat
Condition Score 5 - Very Fat

Not only is it important to continue to monitor the body condition score of the doe throughout the breeding season, it is also important to monitor their score after birth. There are many nutritional needs that need to be met after the birth of the kid. When does enter breeding season in good condition, the production of colostrum and milk are generally not a problem, but if they do not have the ideal BCS, they may have a hard time producing colostrum and milk after kidding. Colostrum is the “first milk” and is high in fat, energy, vitamins A and D, white blood cells, and growth factors. Since kids are born with little to no antibodies, colostrum is important to newborn kids as it provides them with immunoglobulin (antibodies that help fight off bacterias and viruses) rich nourishment.

Modified from Purdue Extension: AS-550-W

Artificial Breeding Methods

Although natural breeding has been proven to work effectively, many producers choose to use artificial breeding in their breeding programs for a number of reasons. Use of artificial breeding can: aid in genetic improvement, allow for access to many more genetic gene pools, and control specific mating pairs. Because of these reasons for artificial breeding, it can often make the cost of artificial breeding worth it in the long run. The two methods of artificial breeding used in goats are artificial insemination (AI) and out of season breeding. AI is most commonly used in both stud and commercial herds. Stud refers to breeding stock or a herd that was established for selective breeding of livestock to maximize the success of the stock.

Artificial Insemination (AI): It is a process where animal caretakers insert semen from straws into the doe for impregnation. The main benefit for this method is the ability to choose different and possibly better genetics for your herd. The downside is that there are a limited amount of technicians that can do this process and it is quite expensive, especially in the goat industry.

Out of Season Breeding: Since goats are seasonally polyestrous they will only be fertile during the fall and winter when the days are shorter in length, you can attempt to breed your herd out of season. It is very costly to operate but a benefit from this is that you could reach a market that is not as popular. When doing this you can possibly get more money for your market goat when out of season. You can achieve this through artificial lighting. Males and females must be housed separately indoors to allow control of light exposure. With using artificial light, you can use this to mimic the normal pre-breeding/early breeding season that would allow the doe's to go into estrus. You can also use injectable hormones to achieve out of season breeding as well that forces the doe into estrus.

Identification System

Importance of IDing

Animal identification is the main way to keep track of individual animals within your herd. Not only does it keep track but it helps with keeping accurate records of the animal like birthdate, parentage, production records, health history, and more. More benefits of identification is the ability to quickly identify an animal for use or culling, show origin of the animal, and overall makes the process more efficient.

The use of scrapie tag identification in goats is regulated by the USDA called the Scrapie Eradication Program. To comply, goat producers must insert an official scrapie tag in the ear of show goats, goats over 18 months of age, any sexually intact goats under 18 months of age not moving directly to slaughter or to a terminal feedlot.

Modified from Purdue University: Methods of Livestock Identification and USDA - National Scrapie Eradication Program

Different Forms of ID

Although there are many forms of identification, not every form is entirely beneficial or efficient to every operation. When selecting a form of identification it is important to consider the needs of the operation and the effectiveness of each form of identification. In any case, two forms of identification can be used to ensure permanent identification. The different options for identifying sheep are: ear tags, electronic ID, nose printing, paint branding, and tattooing.

Ear Tagging: Ear tags come in a variety of sizes and colors. Selection of a tag type depends on the size, age, and environment of the animal. Tags are pierced through the animal's ear, and allow for an animal to be identified from the front and rear. Information on each side of the tag can be identical or differ depending on operation preference. An ear tagger that corresponds with the type of tag should be used for application of the tag. Ear tags are a good identification option that is easy to use, inexpensive, durable to all kinds of weather, and easy to read. The downside to using ear tags is that they can be ripped from the animal's ear, can become too dirty to read, or can be worn to the point of being unreadable.

Electronic ID: There are many forms of electronic identification that can be used, but the most common include: electronic ear tags, microchips, and electric collars. Electric IDs work by scanning the identification's radio signal and interpreting that signal as a numerical code. This code is tied to a computer file for every particular animal. Electric ID can locate animal information and history quickly by the scanning of the electronic chip. Electronic identification systems can be fairly simple to use, and can be easily used in tandem with another form of ID. The use of electronic ID can easily give operation managers easy and quick access to all kinds of data.

Nose Printing: Nose Printing is a form of permanent identification that is most commonly used for sale or exhibition of sheep and goats. Nose printing is a good form of identification because, like fingerprints, it cannot be changed. The lines and bumps of the nose create a unique pattern specific to each animal. Nose prints are created by placing a small amount of ink on the animal's dry nose and transferring it to an index card with sufficient support behind it by pushing the animal's nose to the index paper. Nose prints have to be clear and free from smears to be acceptable.

Paint Branding: This method of identification is a temporary form of identification. Paint branding is mainly used for separating animals into specific pens, when offspring need to be identified with their parents, in the sale barn to visibly see what animal you want to purchase and many more purposes. Generally the left side of the animal gets "painted" for consistency purposes. Make sure to apply the brand evenly with a slight rocking motion back and forth and perpendicular to the animal's backbone. Also make sure that you do not have too much paint as it can run down the animal's back and become illegible.

Tattooing: Tattooing is a permanent form of identification commonly used among many species. An identifying number and letter combination is imprinted into the skin of the animal using a type of ink that cannot be removed. The tattooing tool uses numbers and letters made of sharp, needle like structures that are secured on the application pliers. After the tattoo site heals, it will be more visible. The identifying tattoo can be placed in the ear of the goat so it does not interfere with the use of ear tags. The disadvantage to tattooing is the animal must be restrained for application and to read the identifying tattoo and can be very hard to read against dark-colored ears. It may be beneficial to use tattooing in conjunction with another form of identification that is more visible. For goats the primary spot for tattooing is either on the inside of the ears or the inside of the tail. The underside of the tail is a great spot when the goat has minimal space for ears (Lamancha breed).

Modified from Purdue Extension : AS-556-W

Breeds

Alpine

This breed originated in France. Coloring characteristics range from pure white through shades of fawn (light brown), gray, brown, black, red, bluff, piebald (spotted), or various shadings or combinations of these colors. Known for a straight face, short hair, and ears are medium sized and erect.

Boer

This breed originated from South Africa. Primarily a meat breed. Coloring characteristics include an all white body with brown around the head excluding the nose area. Has horns that curl back. Known for high ADGs.

Lamancha

This breed was developed in the United States with goats of Spanish origin. The Lamancha breed has excellent dairy temperament with high milk fat. Coloring characteristics come in a variety of colors and patterns. Known for their face being straight and ear types. They can either have the “gopher ear” (ear length of 1 inch) or “elf ear” (ear length of 2 inches). Hair type is short, fine, and glossy.

Nigerian Dwarf

This breed originates from West Africa. Coloring characteristics can be any color (black, chocolate, gold, and white, red, gold, and black markings/spots). Nose is straight and the ears are upright. Hair coat is short to medium in length.

Nubian

This breed was developed in England with a mix of British goats and goats of African and Indian origin. This breed is an all purpose breed (meat, milk, and hide). Coloring characteristics include black, red, tan, and white. Known for long ears that hang below the muzzle.

Oberhasli

This dairy breed originates from Switzerland. Coloring characteristics include chamois (reddish brown) and has specific black markings. It is medium sized and has erect ears.

Saanen

This dairy breed originated in Switzerland. Coloring characteristics include white or light cream. They are heavy milk producers and are medium to large in size. Hair should be short and fine and erect ears.

Toggenburg

This dairy breed originates from Switzerland and is the oldest known dairy goat breed. Coloring characteristics include colors from light fawn to dark chocolate with distinct white markings. Known for medium size that is smaller than other alpine breeds.

Modified from Oklahoma State University Extension: Breeds of Livestock - Goats

Showmanship

Appearance

When entering the show ring, it is important to present yourself and your project to the judge in the correct manner. To do so, your animal should be clean, well-groomed, and possibly clipped if allowed and in a way that is acceptable for your particular sex or breed of goat. Generally, your goat project will be short clipped for fitting purposes. Always ensure to read your county or show guidelines to make sure that your animal is fitted correctly.

To present yourself along with your project, you should look neat and clean just as the goat looks well-groomed. It is highly recommended that an exhibitor wears the proper attire. Boots, jeans, belt, and a tucked-in sleeved shirt are the typical show attire for goat exhibitors. It is good to avoid jeans that may be faded and/or ripped and t-shirts (unless directed by the show coordinators). It is always good to check dress code for a show if you are uncertain in case of any specific clothing requirements. Along with your appearance, it is important to practice good posture and attitude in the ring as well. Be sure to stand with your back straight, trying to not lean back. It is very important to stay calm and have a good attitude in the show ring, by being upset and nervous you can make your goat upset and nervous as well.

Tools Taken into the Ring

Before entering the ring, it is important that you are prepared and have all the tools necessary to exhibit your animal. When entering the ring you should have a show halter/collar and exhibitor number.

The show halter or collar is recommended to be worn in the show ring while exhibiting your goat project. Show halters can be adjusted to fit around your animal's head. A show collar should fit loosely around their neck and be pulled up on the leather section with your knuckles down to move your animal. The chain should be touching the goat's throat.

The final thing you need in the show ring is your exhibitor number. Exhibitor numbers are needed to identify exhibitors in classes and ensure the correct animals are in the ring when necessary. Exhibitor numbers can be attached to the exhibitor in a number of ways. Many goat exhibitors use a safety pin to attach the number to the back of their shirt. There are also number harnesses or an exhibitor number clip holder that can be used.

Both are examples of goat halters

Show collar

Exhibitor number

Modified from Oklahoma State University Extension: Goat Showmanship

Training Your Animal

It is important to keep in mind that showmanship should not start at the fair or day of show. In order to have the best chance of your animal behaving while in the ring it is important to work and train your animal months prior to the fair or show. To excel in showmanship working on your goat by walking, washing, brushing/combing, using the collar prior to entering the ring is recommended.

Grooming your goat before the fair/show helps your animal create a positive connotation to the common practices of washing and brushing will help them feel more comfortable in a new environment. This also helps with the cleanliness of your animal to prevent diseases.

Halter breaking and leading should be taught to your goat project very early on to ensure that they are comfortable with the halter and you leading them. When first breaking your animal, you should use a rope halter or similar to start. Don't tie a goat with a chain style collar to start as they are not used to the equipment and can get injured easier compared to a rope halter. Start by getting them used to the halter and tying them up along a fence or similar. This will teach them to become more comfortable with the halter. Always watch your goat when tied up as your animal could injure themselves when not attended to. When your goat is calm and comfortable, you are prepared to have your project walk on the halter and start to lead. Walking in a smaller enclosed pen will help with slowly easing into the process. When leading you should be walking on the left side of your animal with the halter or chain collar in your right hand. You can switch to a chain collar style lead when your animal is even more comfortable with you and the process. Use light pressure on the chain to not hurt the animal.

Once fully comfortable with you and the halter/collar, you can start preparing your animal on how to set them up and practice a mock show. The proper way to have your animal set up is by having your goat's feet at the corners of the body with its weight evenly dispersed over its legs. You can move their legs with your hands by picking them up and placing them in the correct spot or by applying pressure to their feet to move their legs. Their head should also be held up high when in the show ring. To train your animal to do this more efficiently, have your project stand with their head held up high for 20 minutes a day. When practicing for the show ring, don't forget to be aware of all your surroundings. It is important to know where the judge is in the ring at all times, to be aware of your animal and other animals, and to recognize how the ring is set up for particular shows.

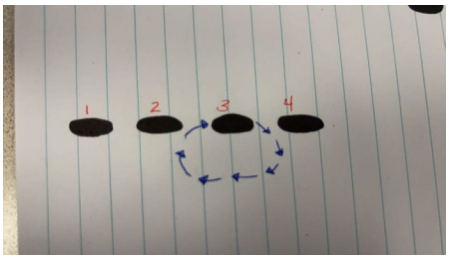
Modified from Oklahoma State University Extension: Goat Showmanship

Ring Setup

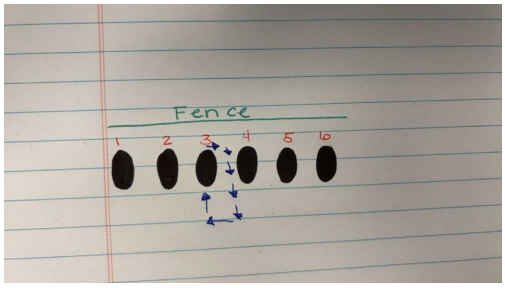
Although every judge's ring procedure may vary from judge to judge, there are some basic ring procedures that you should be aware of prior to entering the ring. If you are not exhibiting in the first class, it can be very beneficial to watch and observe how the judge sets up his/her ring and their likes/dislikes. If you are in the first class, you can always look for and pay attention to the ring stewards and judge to make sure you're lining up where the judge wants you to.

One of the most important things to remember in the show ring is to be courteous to those around you. Ensuring your line up with the first person in the line will help to keep from "burying" or covering the line of view from the judge to another person. If another exhibitor's animal stops in front of you, it can be helpful to assist the other exhibitor as best you can. In the instance of vacant spots directly in front of you, you should pull your goat ahead to fill those spots to condense the area the judge has to cover to examine the livestock.

When in the ring, there may come a time where you need to reset your animal. To do so, you have to pull your animal out of line and re enter your place in line again. When in a head to tail lineup, it is fairly easy to reset yourself as you simply pull your animal out and loop around re entering the line where you come out of, as straight as you can. Be sure to watch out for anyone else who may be resetting or being pulled into a place by the judge. Resetting while in a side by side lineup may be a little more difficult as you are closer to one another. To do this, you will have to push your animals head away from you and turn them right, to get out of line. In an instance like this, you want to keep your animal between you and another animal for as long as possible to avoid injury from accidentally spooking another exhibitor's goat project.



Head to tail reset



Side by side

Modified from OK State University Extension: Goat Showmanship / Beef Showmanship

Commonly Asked Questions in Showmanship Classes

What are the offspring called?

What is marbling?

How by looking at your animal can you tell the age?

Age/Weight/Breed

Where's (insert body part) located on your animal?

Parts of the ruminant digestive system?

What is something you like about this animal?

What can you change about this animal?

What percent of protein and fat is your feed?

Name some cuts of meat.

What is your animal's daily rate of gain?

Name 3 other breeds besides the breed that you are showing.

Why did you choose the feed you are feeding your animal?

What was your target weight for the fair and why?

How did you prepare your animal for the fair/show?

Modified from Montana State University Extension: Sample Livestock Project Interview Questions