

INTRODUCTION

The Central Florida Fair has adopted the study guide developed for the Florida State Fair Skillathon. The topic for this year's Skillathon is **nutrition and feeding management**.

The Florida State Fair and the Central Florida Fair recognizes that agricultural education instructors, 4-H agents, parents, and leaders provide the traditional and logical instructional link between youth, their livestock projects and current trends in the animal agriculture industry.

PLEASE NOTE: This manual is provided as a **study guide** for the skillathon competition and should be used as an additional aid to ongoing educational programs.

Sections are labeled **Junior, Intermediate & Senior, Intermediate & Senior, or Senior** to help exhibitors and educators identify which materials are required for each age level.

** Additional information is noted in the study manual for preparing for the Champion of Champions competition.

Juniors (age 8-12 as of September 1, 2007)

Digestive tract parts identification
Feed classification & identification

Intermediates (age 13-15 as of September 1, 2007)

Digestive tract functions
Feed tag analysis

Seniors (age 16 and over as of September 1, 2007)

all of the above plus...
Evaluating Feed Efficiency
Evaluating and selecting feedstuffs
Body Condition Scores

GOOD LUCK

Breed Identification

Animals are selected for traits that are considered economically important. Though most of our livestock industries use crossbreeding systems, it is still important to consider the purebred animals that contributed the genetics to the composite breeds we see today. A purebred animal is one that has the characteristics defined by the breed registry and purebreds are expected to pass those traits on to their offspring with a high degree of predictability. When animals of different breeds are mated, we call it crossbreeding. Some crossbred animals are now listed as purebreds because they have a set of traits that are consistently passed on and a breed registry has been established.



Corriedale:

Medium to large in size, this breed originated in New Zealand from a Lincoln Ram and Leicester/Merino Ewe cross. They are a polled breed with high-quality, heavy fleeces.



Dorset:

This breed has a white face and can be polled, scurred or horned. The ewes breed out of season, are good milkers and often produce more than one lamb crop per year. They are medium-sized and originated in England.



Cheviot:

From Scotland, this polled breed has a small, blocky body with white face and legs and black nostrils.



Suffolk:

Originating in England, this breed has black legs, a black head and is polled. It is highly popular, having the most number of registrations in the U.S. Suffolks are meaty and have excellent carcass quality.



provided by Sally Anne Thompson

Southdown:

The oldest breed from England, Southdowns are small to medium in size with grey to mouse-brown faces. They have wool on their legs and are polled. Southdowns produce meaty carcasses.



Hampshire:

This is a popular, large, meaty-type breed with black faces, a wool cap and wool on its legs. The lambs grow fast and the ewes are good milkers. This breed also originated in England.



Rambouillet:

Merinos imported from Spain to France formed the foundation of this breed known for superior, long, dense, fine wool. Rams may be horned or polled. They are hardy, good foragers, excellent mothers and have been used extensively in crossbreeding systems



Jacob:

A truly unique breed, both ewes and rams are horned with 2, 4 or even 6 horns. The trademark white and black wool is favored by hand spinners and weavers. An unimproved breed with an obscure origin, Jacob sheep have a slight build and goat-like appearance.



provided by Gary Onan

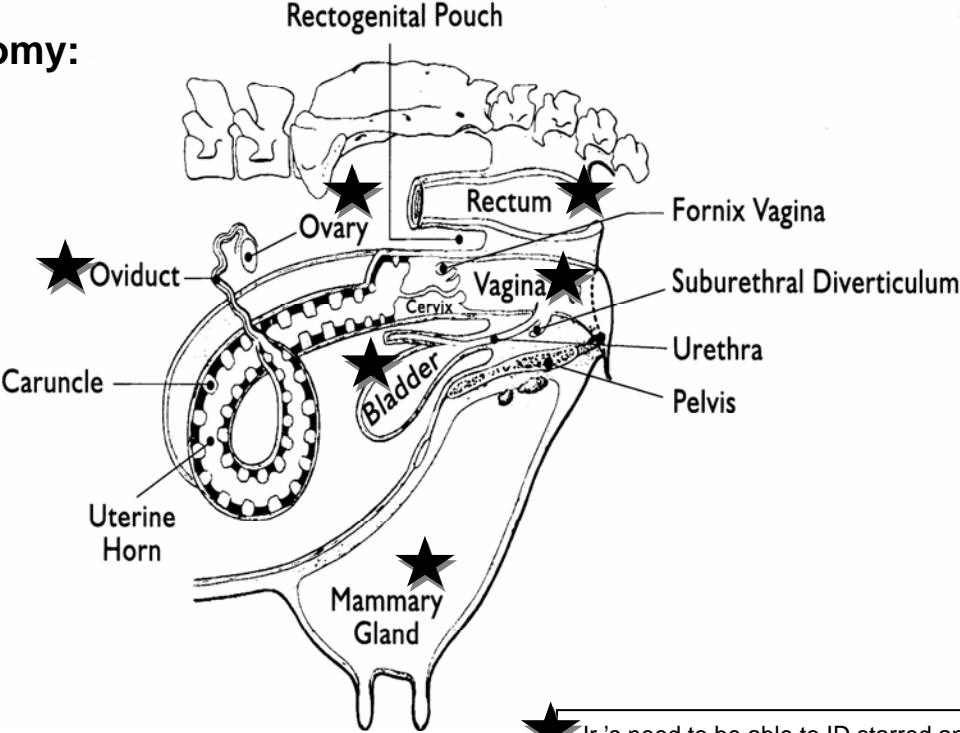
Texel;

Noted for heavy muscling and minimal fat, this breed was first brought into the United States in 1990. The Texel is a white-faced, medium wool breed with short ears and no wool on the face or legs. Research from Clay Center Nebraska indicates Texel lambs have a 6-10% loin eye area advantage over other black-faced breeds.

Reproductive Anatomy

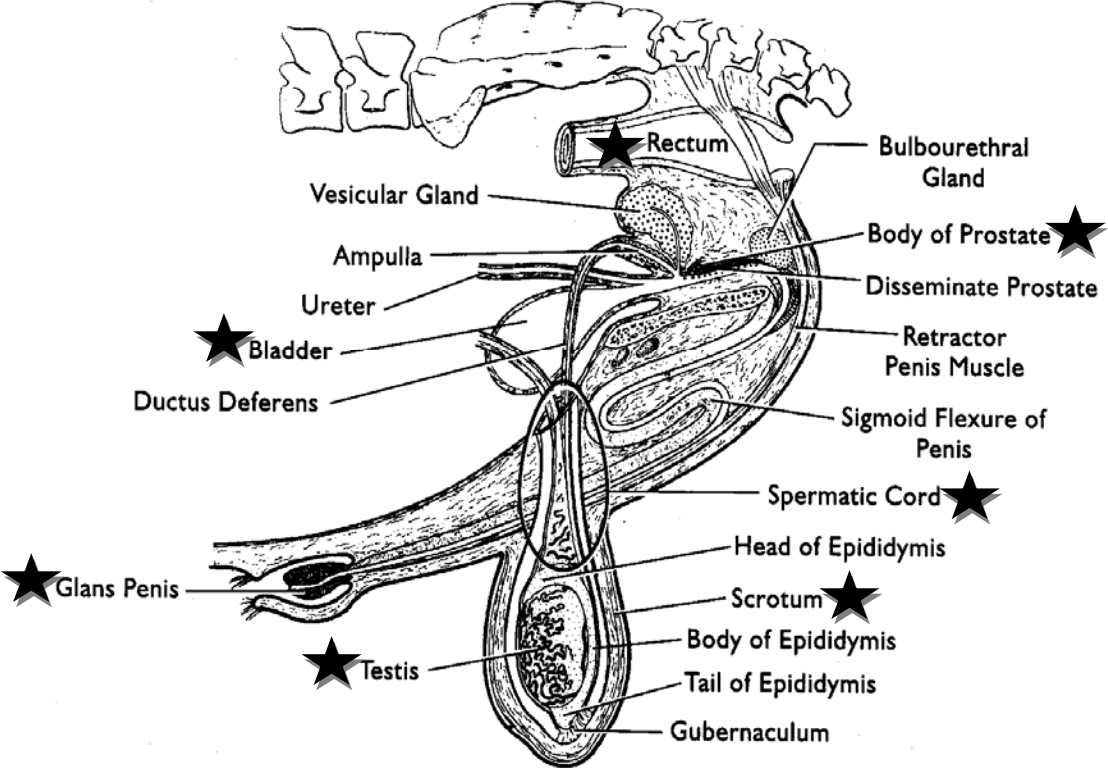
Ewes give birth to single or twin lambs once or sometimes twice a year. The way an animal reproduces will determine the type of reproductive tract it has. Understanding reproductive anatomy is basic to managing reproduction.

Female Anatomy:



★ Jr.'s need to be able to ID starred anatomy. ★

Male Anatomy:



Reproduction Overview**

Sexual reproduction begins with the ram and ewe mating, called *copulation*. This occurs during the time period (*estrus* or heat) when the ewe will accept the ram for copulation or breeding. The ram deposits *sperm* in the reproductive tract of the ewe. *Ovulation* is the release of the egg cell from the ovary. *Fertilization* is the union of the sperm and the egg cells. The number of young a ewe gives birth to at one time is an indication of the number of egg cells released and fertilized by sperm. *Gestation* is the time during which the ewe is pregnant and *parturition* is the process of giving birth.

Gender Names and Terminology**

Young – Lamb

Mature male – Ram

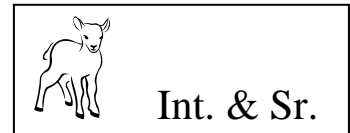
Immature or mature female – Ewe

Castrated male - Wether

Parturition – Lambing

**This information provided for Champion of Champions competition only.

Reproductive Functions



Once you know the names of all of the reproductive structures, the next step is understanding the role of each part. Understanding normal functional anatomy allows the manager to apply reproductive management tools.

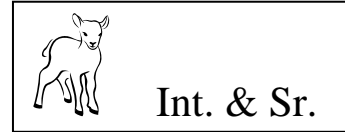
Female Functional Anatomy

- Ovaries** The paired female gonads that produce eggs and hormones. Follicles are blister-like structures that grow on the ovary which produce estrogen (causing heat or estrus) and release the egg at ovulation (rupture of the follicle). Following ovulation, the remaining cells change and form the corpus luteum which produces progesterone (maintains pregnancy).
- Oviducts** Two tubes that connect the ovaries to the uterine horns. The oviduct (also called the Fallopian Tube) transports egg and sperm cells, is the site of fertilization and moves the fertilized ova (egg) into the uterus. The infundibulum is the funnel shaped opening at the end of each oviduct that partially surrounds the ovary and “catches” the egg at ovulation.
- Uterus** Supports, nourishes, and protects the embryo as it develops and expels the fetus at parturition. Walls are soft and spongy in non pregnant animals. It is made up of the uterine body which divides into two uterine horns.
- Cervix** A thick-walled tube with an irregular passageway that serves as a valve between the tougher outside organs and the delicate inner organs. It contains tough cartilage making it firm and dense to the touch. The cervix prevents microbial contamination of the uterus. It serves as the reservoir for and transport of sperm.

Vagina	The passageway from the vulva to the cervix that serves as the organ of copulation and birth canal during parturition. This is the site of semen deposition. The rear of the vagina conducts urine to the outside of the animal.
Urethra	Tube connecting the bladder to the vagina that serves as a passageway for urine excretion.
Vulva	External opening of the female reproductive tract.

Male Functional Anatomy

Scrotum	External sac; contains, supports, protects and provides temperature control for the testes.
Testicles or Testes	Paired male gonads that produce the sperm cells and the male sex hormone, testosterone.
Epididymis	Long coiled tube that sperm enter upon leaving the testicles. It is the site of sperm storage, concentration, maturation and transport.
Vas deferens	Long tube that connects the epididymis to the urethra near the bladder and transports sperm. The ampulla is the section that dumps into the urethra.
Seminal Vesicles	Paired glands that secrete seminal fluid into the urethra which serves as a transportation medium and provides protection for sperm.
Prostate	Found near the urethra and the bladder. It adds fluid to the semen.
Bulbourethral Gland	(Also referred to as the Cowpers gland.) Secretes a fluid similar to that of the seminal fluid that flushes urine residue from the urethra.
Urethra	The tube that passes through the penis and is the common passageway for semen and urine.
Penis	Organ used for copulation that deposits sperm into the female reproductive tract. Has an S-shaped bend called the sigmoid flexure which allows the penis to be retracted into the body by the retractor penis muscles.
Glans Penis	The free end of the penis containing sensory nerves and the opening of the urethra.
Prepuce	Fold of skin serving to protect the penis by enclosing the free end when retracted.



Selection: Visual Evaluation

Many traits of economic importance can be evaluated by simply looking at the animal. In purebreds or registered animals, the ideal is usually described or illustrated by the breed registry. Most livestock show judges rely totally on the way the animal looks, moves or feels to make their decisions on class placings. Learn more about how to judge breeding sheep online at: http://www.oznet.ksu.edu/library/4H_Y2/S92.pdf

Feet and Leg Structure

How well an animal can stand and move around will have a major impact on its ability to find food, mate and care for its young. Often, an animal that stands correctly will move freely while a crooked legged animal may have trouble getting around and may become sore or lame. Feet and leg structure as well as movement are important evaluation criteria for breeding animals.

Criteria for Selection Using Visual Appraisal

The criteria listed below are commonly considered most important in visual evaluation. The priority or emphasis placed on each may change with market demand, breed, age, management scenario and performance data. For wool breeds, consideration should be given to fleece as well.

<u>Rams</u>	<u>Ewes</u>
Frame	Frame
Structure	Structure
Muscling	Volume
Pounds (Growth)	Femininity
Volume	Muscle

Structure = correct
 Frame = optimal
 Volume = more is better
 Muscling = more is better

Pregnancy and Parturition**

It is important to know if a ewe is pregnant in order to feed her properly and to prepare for delivery. After breeding, failure to return to estrus is the first sign of pregnancy. In sheep an ultrasound machine can be used to tell if the female is pregnant. This machine sends out sound waves which bounce back and register as a picture on a monitor.

If you know when a ewe was bred and the length of gestation, you can figure out when to expect her to give birth. Pregnancy ends with the process of parturition. There are several signs of approaching birth: udder fills with milk, teats appear full, ewe becomes restless, may go off by herself, vulva relaxes, stretches, and may appear moist.

As delivery begins, the ewe usually lays down and begins to push the lamb out with her abdominal and uterine muscles. The first thing to appear from the vulva is the "water bag" followed by two front feet and a nose.

When everything is normal, ewes deliver their offspring without assistance. Sometimes things don't go well and the manager must help by carefully pulling along with the ewe's contractions (pushes). Once the lamb is delivered, the placenta(s) (afterbirth) should be passed out as well. Difficult births (dystocia) and retained placenta usually lead to problems with the ewe breeding back.

Reproduction Equipment and Use



It is important to know different equipment that is used in breeding, aiding parturition, and caring for young. Below is a partial list of items you should be able to identify and tell what they are used for. There may be others that are not listed so know all equipment that is used for practices which are explained in this manual. Livestock supply companies' catalogs are a good study reference.

Semen tank	Thermometer
Breeding gun	Straw cutter or scissors
Breeding sheath	Forceps
Breeding gloves	Lubricant
Thermos	Speculum
Insemination pipette	Ultrasound machine
Implant gun	Artificial vagina
Iodine/disinfectant	Ear tagger
Branding irons	Tattoo numbers &/or letters
Burdizzo	Notching clippers
Elastrator	Nursing bottle
Emasculators	Shearers
Dehorning irons	Syringe and needle
Horn spoons, tubes, scoops	Heat detection devices
Knife	Calf, Lamb puller

Processing Newborns

All lambs, whether born naturally or with assistance, need special care to remain healthy. Small lambs will be especially susceptible to starvation and/or hypothermia. The placental membranes should be removed from the head and fluid removed from the nostrils and mouth if the ewe is unable to attend to this. The umbilicus should be dipped with a good disinfectant. Providone iodine is an adequate solution for this purpose. A partially filled plastic film canister works well for this. Normal lambs will start trying to stand up immediately and should be on their feet and nursing in a short period of time. Nursing within the first few hours after birth is critical in order to absorb antibodies to fight disease. The first milk, called *colostrum*, contains antibodies, is thick and yellow and is only produced for a short time following lambing.

Docking

This is "stubbing" the tail. Lambs should be docked between 3 and 10 days of age. Docked lambs stay cleaner and are therefore less likely to get diseases and parasites. The tail is cut at the first or second joint, or about 1 to 1.5 inches from the body. Docking may be done with a knife, burdizzo, elastrator, emasculator, "all-in-one" electric docker, or hot docking iron. Follow good sanitation and dip all tools in a disinfectant before use. It is important to leave a tail stub to prevent rectal prolapses.

Castration

Males that will not be used for breeding should be castrated (testicles removed) as early as possible to reduce stress, minimize bleeding and prevent the development of secondary sex characteristics. Many producers dock and castrate lambs at the same time. Castration can be done with a knife, burdizzo, elastrator, “all-in-one”, or emasculator. Proper sanitation methods must be followed. Visit <http://www.sheep101.info/201/dockcastrate.html> for more details on docking and castrating lambs.

Ear Mark

This should be done to lambs when they are docked and castrated to make it simpler to tell the wethers from the ewes. Different markings can be used each year to help identify ages easily. Plastic tags may also be used to identify the lambs.

Dehorning

The practice of dehorning or disbudding lambs is not as common as for calves or goats. Many sheep are polled (genetically hornless), in some breeds only the males are horned, and because many sheep are kept in more open situations, the presence of horns does not cause as much damage as in animals kept in close quarters. If lambs are to be dehorned, it should be done when they are less than twelve weeks of age using cautery (heat only) or by physical removal of the horn bud, using scraper blade or dehorning shears.

Breeding Management Practices



Natural Mating

This type of mating is the easiest for the rancher and the most commonly practiced in the sheep industry. If rams are allowed to be with the ewes, they can find the ones ready to breed and they know what to do. Sheep are short-day, seasonal breeders, meaning ewes will begin to have heat cycles when the days begin to get shorter. The breeding season begins when the rams are placed with the cycling ewes and ends when the rams are removed and/or the ewes stop cycling.

Heat (Estrus) Detection

In herds where artificial insemination is to be practiced, one of the most important management practices is detecting *estrus* so that insemination can be performed at the proper time. The key to heat detection is frequent and careful observation of the flock. A good record keeping system provides important information for breeding and parturition.

Ewes do not demonstrate any signs of estrus when separated from the ram. Therefore, it is necessary to use an altered ram to detect estrus in ewes if AI or pen mating are to be used. The vasectomized (surgically altered) ram has been used most frequently, but rams with redirected prepuce are preferred because of reduced possibility of disease transmission. Paint on the brisket or a harness on the ram can be used to identify ewes that have been mounted.

****Timing of Reproductive events:**

Age at puberty – 6-8 mos. Weight at puberty – 60-75 lbs.

Estrus – 24-36 hrs. Estrous cycle length – 17 days Gestation length – 145-151 days

** This information is only intended for the Champion of Champions Competition.

Estrous Manipulation

Synchronization is the altering of the normal estrous cycle through the use of hormones to cause females to come into heat during a specific time period. Synchronized breeding reduces time required for heat detection and breeding. Synchronization is not often practiced in sheep. Outside of the normal breeding season, the average ewe is not cycling. Since the breeding season is linked to **less** day length, artificial lighting programs may be used to cause them to breed out of season. If sheep are kept under artificial lights for 14 to 18 hours per day for 3 months and then gradually cut back to 6 hours of light per day, more than 50% will come into estrus and conceive. This allows sheep to be bred out of season.

Artificial Insemination

If you do not own a ram, or if you want to breed to an animal that is too expensive for you to own, it is possible to buy semen and breed artificially. Artificial insemination (AI) accelerates genetic progress by allowing outstanding rams to breed more ewes than they could with natural mating. Key components of artificial insemination are: selected matings, heat detection, semen collection, proper handling and storage of semen, proper insemination technique, and accurate record keeping. AI is practiced in some situations in sheep. Success (high conception rate) depends on all of the factors listed above.

AI procedures

Due to the difficulty detecting heat, poor conception rates and relatively minimal financial incentive, AI is not routinely used in ewes. Because of their small body size the method used in cattle is not possible. Instead, a speculum (clear glass or plastic tube) is used to locate the cervix. Typically a .25ml straw gun is passed through the cervix. Complete passage is only successful 50 to 60 percent of the time.

Selection



Proper selection is a critical factor in establishing a good breeding program. The goal of animal selection is to produce an animal that will yield/produce high quality products at a low cost to the farmer and the consumer. This goal is the foundation of the standard “ideal animal” in the various species. That is, the animal that expresses, to the highest degree, traits that are of economic importance like lambing rate, growth rate, carcass merit or fleece quality is the type selected.

The expression of observable or measurable traits is called the animal's *phenotype*. Phenotype is affected by both heredity and environment. The inherited portion of a trait is referred to as *genotype*. How well an animal expresses the genotype is affected by the environment in which it is raised. Therefore, when making selected matings, use and management of the offspring should be considered.

We use both visual appraisal and performance records when selecting breeding stock. The following section outlines various traits and methods used to evaluate breeding sheep. Use and management are expressed as *scenarios*.

Performance Evaluation

How an animal looks may be important in the show ring but how that animal performs is more important to the farmer. With advancements in the understanding of heredity and the increased use of computers for keeping records, the use of genetic information in selected matings has become easier. By keeping records on desirable traits and then carefully selecting rams and ewes to be mated using the available data, producers can improve the genetics, and thus the performance of their offspring.

Performance Data

There are several types of performance data that, when used properly, are important tools in the selection and genetic improvement of animals. Many breed associations and commodity groups provide information, assistance and technical support to producers wishing to collect and use performance data. The American Sheep Industry Association is dedicated to making sheep production efficient and profitable through research and education. <http://www.sheepusa.org/>

Adjusted Performance

Adjusted performance consists of an animal's actual performance record with an adjustment for age or other factors. For example, instead of weighing animals at the same day of age, they are weighed on the same day and the weights are adjusted for age. Below are examples of the most common data used. The desirability of a high or low value for the trait is dependant on the scenario.

Sheep

50 day gain

100 day gain

Number born per lambing

Number weaned per lambing

Expected Progeny Differences (EPDs)

EPDs estimate how future progeny of an animal will compare to progeny of other animals within a breed and are computed in the units of the trait being measured. They are accompanied by an accuracy value between 0 and 1 which represents the reliability of the prediction. For example, a ram with a 1.0 60-day weaning weight EPD should sire lambs with 1 pound heavier 60-day weaning weight than a ram with 0.0 60 day weaning weight EPD. EPDs are based on an animal's performance along with measures of the performance of an animal's relatives, including ancestors, siblings and progeny. When comparing EPDs for selections, always keep in mind the situation or scenario in which the animals are to be used. Visit the following web site to learn more about sheep EPDs:

<http://www.apsc.vt.edu/centers/sheepcenter/Understanding%20Sheep%20EPDs.pdf>

SHEEP SHOWMANSHIP

ATTIRE:

Required Dress Code: All exhibitors will be required to be clean and neat and dressed in white, green, dark blue or dark black jeans or slacks with a solid white shirt with a white collar. FFA and 4-H accessories are strongly recommended. No caps or hats. Closed-toed shoes or boots are required.

Training Sheep for Showmanship

Leading

1. To lead a sheep, place one hand on the jaw, keep the head up and alert and put the other hand on the dock or behind the ears.
2. Pull up on the dock to get the sheep to move or apply pressure behind the ears. The hand used on the dock or behind the ears does not have to touch the sheep but it should be ready to control the sheep if it gets spooked.
3. When touching the sheep, keep your fingers together so no finger marks are left on the wool.

Turning

1. To turn the animal, keep your hand on the jaw, not the throat, and turn its head toward your belt buckle.
2. Slowly move the sheep toward you, switch hands until you stand at the opposite shoulder. This keeps the sheep between you and the judge and allows him or her an uninterrupted view of the animal.

Bracing

1. Bracing is tightening the lamb=s muscles so it will feel firm and heavily muscled. This is done when the judge handles the animal. This also gives you more control during the handling process.
2. The feet should be positioned correctly before pressure is applied so the animal will maintain its balance.
3. Once the feet are placed correctly then pressure is applied as firmly as possible, but the sheep should not move and its top should remain straight. Pressure is applied by placing your knee in the animal=s chest and by using your hands to elevate the head slightly.
4. Do not pick sheep=s front feet off the ground.

In the Show Ring

Proper Showmanship Procedure

1. Enter the showing with a smile on your face. Circle the judge in a clockwise pattern.
2. Be considerate of the animals around you. Walking at a normal pace should leave room in front and behind your animal. This room is necessary to keep other exhibitors from feeling crowded.
3. Don=t crowd your own animal into line. Look for an open place and then move into position to set it up. Always set up the side closest to the judge first. For example, if the judge is viewing the side of your animal, set the two side legs closest to the judge first. If the judge is viewing the rear of the animal, set the two rear legs first.
4. Always keep your eye on the judge. A good showman knows where the judge is in relation to his/her animal at all times. This enables the showman to follow the judge=s directions and commands.
5. When given a command, complete it as quickly as possible.
6. Know information about your sheep in case the judge asks questions.

Proper Posing Techniques

1. There are three positions to be aware of when showing:
 - Rear View - when the judge is behind the sheep, the exhibitor stays in front of the sheep, hands on the jaw, not the throat, of the animal with the feet set the proper distance apart.
 - Side View- when the judge is facing either the left or right side of the sheep, the showperson sets the legs nearest the judge first. The exhibitor has the most control if he or she reaches over the top of the animal, keeping the sheep between his or her leg at the shoulder and the arm used to set the feet. Some judges prefer reaching under to set the animal=s feet.
 - Front View- when the judge stands in front of the sheep, the showperson stands off to the side, near the shoulder, with the hand on the jaw keeping the animal=s head in line with the brisket and backbone. The head should be set at an angle best for the sheep, front legs parallel to each other and set at a distance slightly narrower than shoulder width, and rear legs should be parallel to each other set at distance slightly wider than the front legs.
 - Changing Sides- to change sides, keep your hand on the jaw and slowly move around the front of the sheep until you stand on the opposite side. This allows you to keep the animal between yourself and the judge for an uninterrupted view.
2. After the animal is set up, move to its shoulder opposite the judge and kneel, making sure to keep the head up and the topline straight. Most judges prefer you not put your knees on the ground, so you do not get sawdust or dirt on the sheep or lose control in the show ring.
3. Remember to concentrate on your animal=s position and watch the judge. You should have a calm, confident manner in the showing.

* As a tip, on the day before the show, take time to study the show arena. Look for unlevel areas and keep them in mind when showing on show day. You want to set your animal=s rear legs in low areas and the front legs on high ground.

References and Web Sites for Further Study

Web sites

Animal Breed Identification:

<http://www.ansi.okstate.edu/breeds/>

Methods of Animal Identification:

<http://lmic.info/memberspublic/animalID/AnimalID.htm>

http://www.aphis.usda.gov/vs/nahps/animal_id/

Reproduction/Genetics:

<http://agrinet.tamu.edu/products/sheep.htm>

<http://www.sheepandgoat.com/repro.html>

Management:

<http://www.sheep101.info/201/dockcastrate.html>

Selection:

<http://www.apsc.vt.edu/centers/sheepcenter/Understanding%20Sheep%20EPDs.pdf>

<http://www.livestocktrail.uiuc.edu/uploads/sheepnet/papers/FUNDAMENTALS%20IN%20SHEEP%20JUDGING.pdf>

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