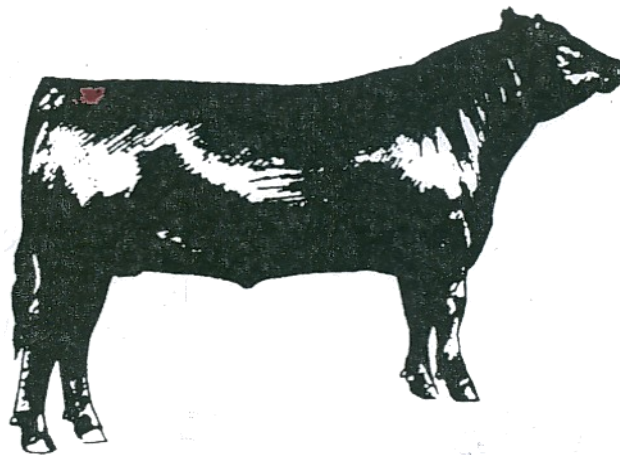


# Osceola County 4-H Market Steer

SKILL-A-THON REFERENCE BOOK  
2025-2026



**UF** | IFAS Extension  
UNIVERSITY of FLORIDA



# Steer Skill-a-thon

This manual has been developed as a study guide for the Osceola County Fair Skillathon. The topic for this year's Skillathon is **Health care management**.

**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. Additional information is available on websites that are listed throughout the manual.

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

## **Juniors (age 8-10 as of September 1, 2025)**

Body parts, Breeds, Structure  
Restraint, knot tying  
Animal Identification (methods)

## **Intermediates (age 11-13 as of September 1, 2025)**

all of the above plus...  
Animal Identification (procedures)  
Recognizing Illness  
Preventing Illness  
Health supplies  
injection sites

## **Seniors (age 14 and over as of September 1, 2025)**

all of the above plus...  
Internal Parasites  
External Parasites  
Disease Identification  
Weight estimation & Dosages  
Medication label identification  
Withdrawal times & Medical Calculations

The contest will be held on January 28th, 2026, from 2:00 p.m. until 6:00 p.m.  
at the Osceola County Extension Office.

**GOOD LUCK!**

**The Skill-a-thon contest will be held on January 28, 2026, from 2:00 p.m. until 6:00 p.m. at Osceola County Extension Office.**

### **KVLS Skill-a-thon Rules for 2025-2026**

1. **Market exhibitors who do not make the 3.25 grade requirement must take the Skill-a-thon in their project area for the animal that they are showing in order to participate in the market programs, i.e. steer exhibitors must take the Steer Skill-a-thon. Any exhibitor who does not meet the required grade average on their report card or who does not have a report card must score 70% on the Skill-a-thon to participate in the Market Animal Program.**
2. All exhibitors must take the Skill-a-thon for the first time on their own, then a reader can be requested the second time, if a passing grade is not achieved.
3. Awards will be given on the score of the first Skill-a-thon taken. Top awards are only given for passing scores (70% or above).
4. Only those exhibitors who do not make the 3.25 grade point requirement are required to take the skill-a-thon and make a passing score of 70% or above in order to participate in the market animal program.
5. Exhibitors must stay in the testing room once they have signed up to take the Skill-a-thon.
6. Exhibitors showing a second animal must stay in the testing room to take the second animal Skill-a-thon.
7. No parents or other adults not on the Committee are allowed in the Skill-a-thon room.
8. No exhibitors are allowed to have cell phones while in the Skill-a-thon room.
9. No time limit will be imposed on the exhibitors.
10. Skill-a-thon handbooks will be given at the start of the project

### **KVLS Awards**

There will be a Junior (8-10), Intermediate (11-13), Senior (14 - graduate from High School) division for the contest. Within each division, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> place will receive rosette ribbons and a monetary award.

# Animal Health

Assuring animal health is a primary responsibility of livestock managers. Failure to do so results in animal suffering, decreased productivity and could even pose a threat to human health. Animal health is so important that the United States Department of Agriculture has an *Animal and Plant Health Inspection Service (APHIS)* to work with the livestock industry in disease prevention: <https://www.aphis.usda.gov/aphis/home/>. Concerns over bioterrorism and potential threats to human health have brought animal health concerns into the spotlight in recent years.

Disease is a departure from health. Disease may be caused by *infectious agents* like bacteria, viruses, fungi, prions, protozoa and parasites. Infectious diseases might be *contagious*, passing from one animal to another. Transmission occurs through *direct* or *indirect contact* with the diseased animal. *Direct contact* transmission happens when the diseased animal physically touches or is very close to another animal. Transmission is passed through saliva, nasal discharge, sexual contact, pus, feces, blood, and/or can be airborne. Diseases may also be transmitted *indirectly* by a third party or mechanically. Contaminated feeders, waterers, shoes, and clothing, farm equipment and tires, biting insects, wild birds and animals can all transmit diseases. Although exposure to infectious agents cannot be completely avoided, most of the time the animal will remain healthy. On occasion, these agents overwhelm the body's immune system, and the animal becomes ill.

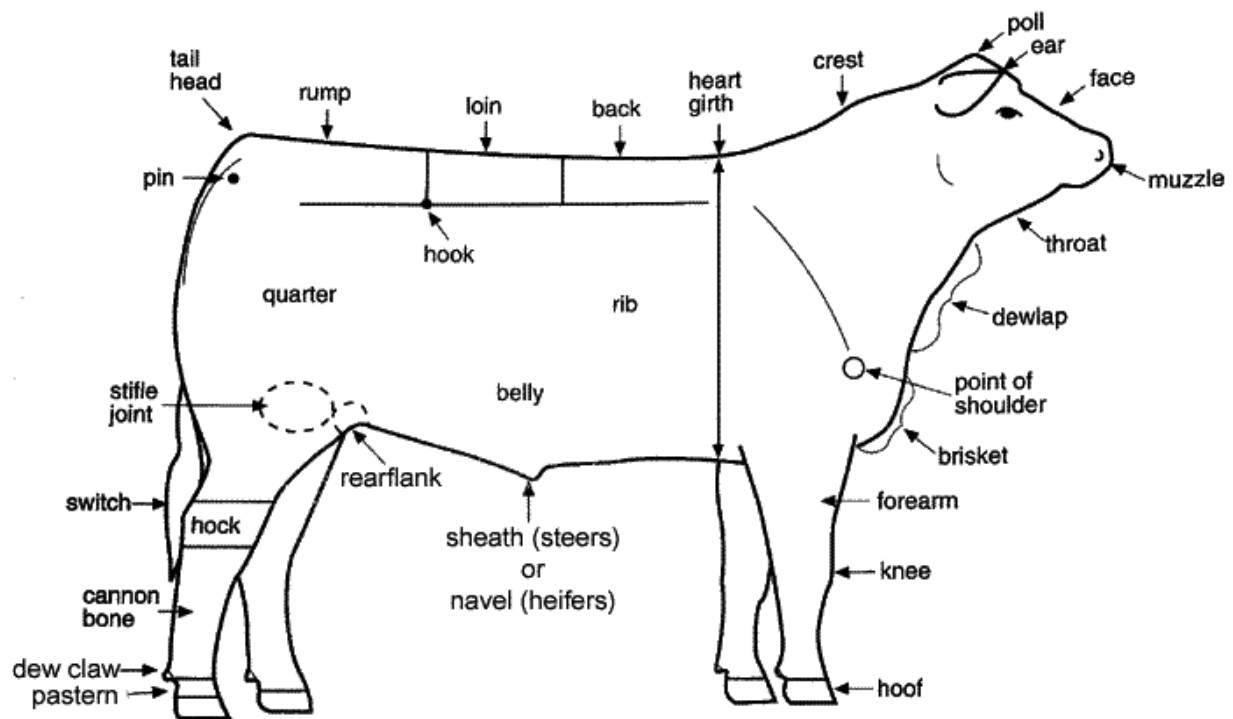
Health problems may also occur from *non-infectious* causes. Malnutrition, trauma/injury, cancer, genetic defects, and environmental hazards like toxins, poison or extreme weather conditions can cause illnesses. While these cannot be passed on to other animals, they can be stressors that lower the animal's resistance to any of the infectious diseases.

APHIS



# Beef Cattle Body Parts

It is important for livestock producers to share a common language. Using the correct names for various body parts is one way to be certain your message is understood. Study the pictures with the names of the body parts labeled so that you can communicate with other producers using correct terms.



## BREED IDENTIFICATION



### BRANGUS

The Brangus breed was developed by crossing Brahman and Angus cattle. Brangus cattle are based on foundation stock that is 3/8 Brahman and 5/8 Angus. Brangus cattle have sleek solid black hides and are polled. An inspection is necessary to determine conformation and breed character before the animal may be registered.



### BEEFMASTER

This breed is a result of crosses among Herefords, Shorthorns and Brahmans. The exact percentage of blood from each is not known. The breed has a variety of colors. Selection has been mainly for good disposition, fertility, gain, conformation, hardiness, and milk production.



### MAIN-ANJOU

Maine-Anjou cattle are dark red and white in color. Some animals are roan in color. They have lightly pigmented skin. They are a horned breed with medium-size horns that curve forward. They are considered docile and easily handled.

## **BREED IDENTIFICATION**



### **BRAFORD**

The color of the Braford is red and shows a Hereford color pattern. The breed is about 5/8 Hereford and 3/8 Brahman. Calves grow rapidly and attain weaning weights of 500 to 800 pounds. The breed is noted for its superior maternal ability.



### **GELBVEIH (a big yellow cow)**

This breed originated in Germany. They are solid cream to reddish yellow in color. These animals are known as a general-purpose breed with good milking abilities.



### **ABEERDEEN-ANGUS (polled, black cow)**

This breed originated in Scotland. These animals are polled with a black coat. They are known for their carcass quality, milking, mothering, and reproductive abilities.

## **BREED IDENTIFICATION**



**LIMOUSIN**  
**(a long, sleek cow)**

This breed originated in the west-central part of France. They are solid-red to golden-red in color with lighter circles around the eyes and muzzle. When slaughtered at an early age, these animals yield a high percentage of lean meat with a minimum amount of fat.



**SANTA GERTRUDIS**  
**(a saggy, solid cherry red cow)**

This breed was developed on the King Ranch in Texas. These animals are 5/8 Shorthorn and 3/8 Brahman. They are known for their growth rate, long life, and hardiness.



**CHAROLAIS**  
**(a big, white, pink-nosed cow)**

This breed was developed in France and imported into the United States from Mexico in 1936. These animals are large and white. They are noted for their fast growth and lean meat.

## **BREED IDENTIFICATION**



**CHIANINA**  
**(the biggest/tallest cow)**

This breed was developed in Italy. These animals are white with black skin pigmentation. They are large. A mature bull can weigh up to 4,000 pounds and stand 6 feet tall. They are noted for their working, mothering, and beef producing abilities.



**HEREFORD**  
**(a white-faced cow)**

This breed was developed in England and brought to the United States in 1817. These animals have red bodies with white faces. They are known for their foraging ability, vigor, hardiness and quiet dispositions.



**SHORTHORN**  
**(a red-and-white, red, white, or roan-colored beef cow)**

This breed was brought to the United States from England in 1783. These animals can be red, white, or roan in color. They are noted for their good disposition, mothering and milking abilities.

## **BREED IDENTIFICATION**



### **BRAHMAN**

The Brahman breed was developed in the southwestern part of the United States. The major use of the Brahman is in crossing with other breeds. The color of the Brahman is light gray or red to almost black. In addition to the characteristic hump over the shoulders, they have loose skin under the throat and large drooping ears. Brahman cattle have a very high heat tolerance.

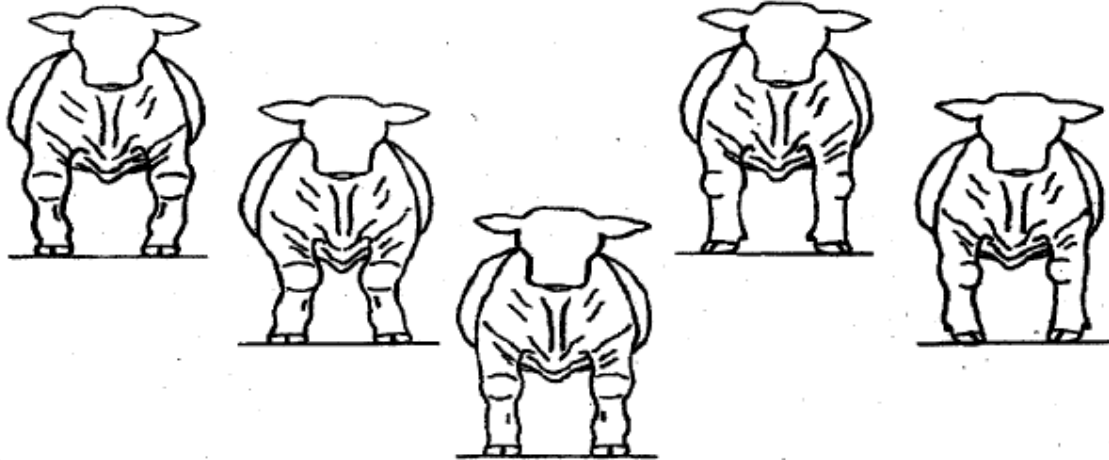


### **SIMMENTAL**

This breed was imported into the United States from Switzerland, France, and Germany. These animals can be red to dark red, brown, or black with spotted bodies and white faces. They are noted for their fast growth and milking abilities.

**STRUCTURAL DIFFERENCES  
FRONT & REAR VIEWS**

**Front Leg Alignment**



Bowlegged

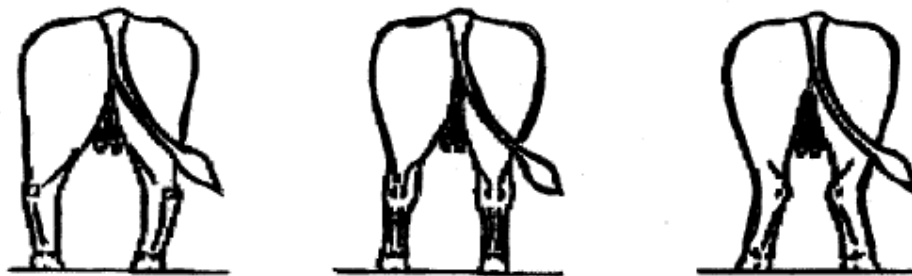
Knock-kneed

Correct

Toed-out

Toed-in

**Rear Leg Alignment**



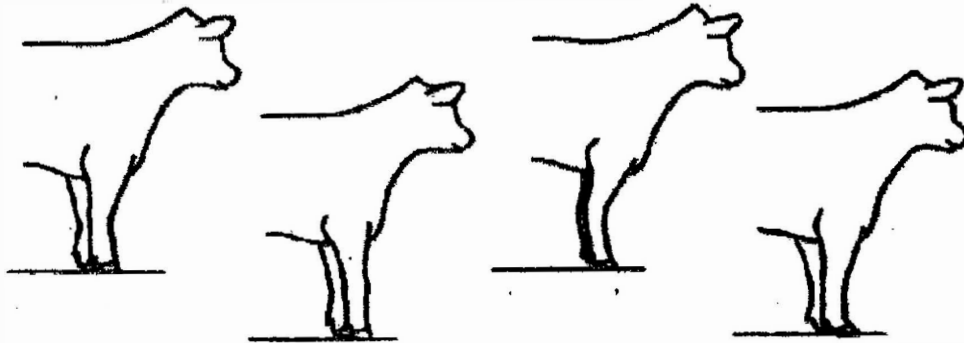
Bowlegged

Correct

Cow-hocked

## STRUCTURAL DIFFERENCES SIDE VIEWS

### Front Leg Set



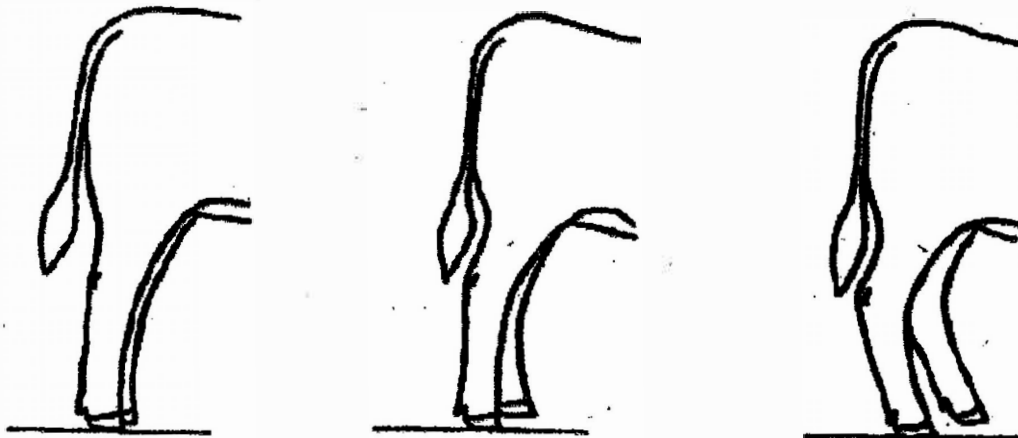
Correct

Buck-kneed

Calf-kneed

Weak Pasterns

### Hind Leg Set



Post-legged

Correct

Sickle-hocked

## STRUCTURAL DIFFERENCES DESCRIPTIONS

<b>Buck-kneed</b>	When the calf is “over at the knees” or buck-kneed, full extension of the knee cannot occur when observed from the side. This is usually seen in cattle that are also too straight in their shoulder.
<b>Calf-kneed</b>	This is the other extreme, where the calf stands “back at the knees” when viewed from the side.
<b>Weak Pastern</b>	Having an angle greater than 45 degrees in the pastern/hoof alignment, putting too much pressure on the joint.
<b>Postlegged</b>	The hock has too little angle or set. The calf is too straight through the joint, resulting in very stiff, constricting movement because of the lack of flexibility. More cattle become unsound because of being postlegged than sickle hocked.
<b>Sickle-hocked</b>	When viewing the rear legs from the side, the hock has too much angle or set, causing the steer to stand too far underneath itself. Often these calves also will droop excessively from hooks to pins.
<b>Bowlegged</b>	When viewed from the front or rear, the knees set too far out.
<b>Knock-kneed</b>	When viewed from the front, the knees are close together.
<b>Toed-out (splayfooted)</b>	The feet toe out away from each other. This problem is often seen in extremely light-muscled, narrow-chested cattle, where the legs are naturally set too close together.
<b>Toed-in (pigeon-toed)</b>	Toes turn in towards each other.
<b>Cow-hocked</b>	When viewing the rear legs from the rear, the hocks are turned in or placed too close together.

## **Restraint**

In order to carry out routine animal health care practices, animals must be prevented from moving about freely. Methods of restraint could be put into five categories.

1. Psychological – knowledge and anticipation of natural behaviors to accomplish task
2. Train or desensitize – repeat exposure to stimulus, cotton in ears, blind fold
3. Confinement – pens, chutes, alleys, stalls, or barriers
4. Tools and physical force –ropes, snares, nose tongs, canes, prods and whips
5. Chemical sedation or immobilization – potentially dangerous, should not be used without veterinary supervision.

Whichever method or methods are employed, it is important to use common sense, plan ahead, be safe and always use SELF CONTROL. Haste is the enemy. Ask the following questions: Will the selected method minimize danger to the handler? Will the method minimize danger to the animal? Will the method cause unnecessary pain or fright? Will the method allow the management technique to be completed as necessary? If any of the questions are answered negatively, other restraint methods should be used.

## **Ropes used in Restraint**

Rope is one of the tools used most often by livestock producers. Knowledge of rope, knots, and hitches is indispensable. The most common type of rope used by livestock producers is the three-strand braided rope which can come in many diameters and be made of man-made or natural fibers. Cotton ropes are soft, flexible and are least likely to cause rope burn though not as strong as other fibers and will rot and deteriorate over time. Cotton ropes are good for tying up limbs, for neck ropes and for lead ropes (if 5/8 inch or larger). Nylon is the strongest type of rope and will not rot from water or mildew but will stretch and often cause rope burn. It makes the strongest lead rope and is excellent for slinging and total restraint. Regardless of the fiber, ropes should have a fairly wide diameter, soft-surface and free of knots. Webbing should be free of rust and dirt and have smooth surfaces. Ropes should be kept clean, dry and untangled.

## **Knots for Livestock Handling**

There are many circumstances in handling cattle that will require you to tie knots. Take the time to learn to tie several types of knots and hitches so that you will have the right knot for the right circumstance. Practice often so that it becomes second nature. In an emergency situation, you do not want to have to think about which knot to choose and how to tie it.

**Knots** join ropes together, attach ropes to a post or rail, or attach ropes to an animal.

**Hitches** are used to attach a rope to a post or rail – the only thing securing the rope to post is the pressure of one rope coil wrapping upon the others.

**Splices** are used to permanently join ropes to one another - individual strands from each rope are interwoven with strands from the other.

<p><b>Reefer's Knot (Quick-Release Square Knot)</b> A good non-slip knot for tying ends of rope together and can easily be released. An advantage is that it can be tied under tension - an important feature for a knot used to restrain livestock.</p>	<p><b>Bowline Knot</b> A non-slip knot used to form a loop that will not tighten or draw down when placed around an animal's body or a post.</p>
<p><b>Quick-Release Knot</b> The standard way to tie an animal to a post. A variation of a slipknot that can be released very quickly, even when under tension. This knot should never be tied around the neck or body of an animal.</p>	<p><b>Honda Knot</b> Knot used to form small loop in the end of a rope in order to pass the rest of the rope through, forming a much larger loop, or lariat.</p>
<p><b>Square Knot</b> Excellent for tying two nearly equal size ropes together or for tying the ends of a single rope together to form a loop. Used mainly to secure gates or cage openings. Also used to tie a cloth or gauze bandage around the limb of an injured animal.</p>	<p><b>Double Half Hitch</b> A quick and easy knot which acts like a slipknot is a convenient way to tie up the end of a rope.</p>

## Methods of Animal Identification

Proper animal identification has always been essential for record keeping and for efficient execution of normal management practices. In recent times, the threat of bioterrorism and the potential for rapid spread of diseases affecting livestock and human populations has led to the development of the **National Animal Identification System (NAIS)**. The intent was to enable 48-hour trace back of the movements of any diseased or exposed animal to help ensure rapid disease containment and maximum protection of America's animals. Opposition to the program has led to less restrictive regulations for improved traceability of U.S. livestock moving between states. The Animal Disease Traceability website is located here: <http://www.aphis.usda.gov/traceability/>.

On January 1, 2014 the FDACS Division of Animal Industry adopted a Florida Cattle Identification Rule (5C-31): <https://www.fdacs.gov/Agriculture-Industry/Livestock/Cattle-Bovine/Florida-Cattle-Identification>.

Many options of permanent and temporary identification exist for cattle. All identification methods should be visible, easy to apply, unalterable, inexpensive and not cause harm or discomfort to the animal. Possible methods of cattle identification include: ear tattooing, ear tagging, hot branding, freeze branding, Electronic Identification Tags (EID)/Radio Frequency Identification Device (RFID) tags, sometimes also referred to as 840 tags (because each animal has a unique 16-digit number starting with a three-digit country of origin number and the USA is 840), or implanted transponders (electronic). Here is more information on EID/RFID tags: <http://nwdistrict.ifas.ufl.edu/phag/2019/05/17/usda-switching-to-eid-tags-for-cattle-identification-in-2021/>.

**APHIS  
Traceability**



**Florida Cattle  
Identification Rule**



**EID/RFID**



## **TATTOOING**

Advantages - It is permanent and does not disfigure the animal.

Disadvantages - Animal must be confined in order to read tattoo. Tattoos are hard to read on dark-skinned animals.

### Equipment Necessary -

- Squeeze Chute or Head Gate
- Tattooing Instrument
- Tattooing Numbers &/or Letters
- Tattooing Ink or Paste
- Alcohol
- Clean Cloth

### Procedures -

1. Assemble the necessary equipment. It is important that the numbers and/or letters be placed into the tattooing instrument in the proper order. As you look at them in the tattooing instrument, they should appear backward. Always check the numbers and/or letters on a piece of paper or cardboard before you begin to make sure they are correctly placed.
2. Restrain the animal.
3. Two ribs of the cartilage divide the ear into top, middle and bottom thirds. The tattoo should be placed in the top third of the ear just above the cartilage rib and equal distance from the base and the tip of the ear. Tattooing on the edges of the ear or in the hair portion of the ear can make reading the tattoo difficult. Do not tattoo between the two cartilage ribs; this area is reserved for some types of ear tags or for a brucellosis vaccination tattoo in the right ear of heifers.
4. Clean the inside of the ear, where the tattoo will be placed, with a cloth soaked in alcohol. Infections or warts can result if a tattoo is placed in a dirty ear.
5. Position the tattoo instrument inside the ear so that the needlepoint dies are above the ribs as described in step three. Squeeze the handles of the tattooing instrument together completely and quickly; then release them fully.
6. Rub tattoo ink or paste into all of the needle marks. Work the ink or paste well into the marks.
7. Release the animal.
8. Clean the tattooing equipment with alcohol after each day of use.

## **EAR TAGGING**

Advantages - Economical; can be read from a distance; flexible.

Disadvantages - Plastics tend to become hard and brittle in cold weather; Easily lost; pre-numbered tags with block-type numbers are difficult to read if they get soiled.

### Equipment Necessary -

Squeeze Chute or Head Gate  
Antiseptic  
Clothe

Ear Tag and Applicator  
Marking Fluid



### Procedures -

1. Select tag style and size.
2. Select contrasting ink and tag colors.
3. Select a numbering system for the ear tags.
4. The next decision will be whether to purchase pre-numbered or blank tags. Pre-numbered tags are more convenient, but not as adaptable to your "system" as the blank tags can be. Make this decision based upon the unique needs of your operation. If you choose the blank tags, number the plastic tags with marking fluid recommended by the tag manufacturer. Plastic tags should be numbered the day before they are inserted into the ear. Number the tags with large numbers along their bottoms so that they can be seen from a distance when hair grows in the ear.
5. Insert the ear tag into the appropriate applicator. Each tag manufacturer has an applicator designed specifically for its type of tag. Two-piece tags require that the male portion of the tag be slid over a pin and the female portion inserted into a clip. Be sure to follow the manufacturer's directions when inserting the tag into the applicator. When using two-part tags make sure that the male portion of the tag lines up with the female portion of the tag.
6. Select the ear to be tagged.
7. Select the tagging site on the ear. The site selected will vary with the style of tag selected. Two-piece tags should be placed between the cartilage ribs, approximately halfway between the base and tip of the ear.
8. Hold the ear with one hand while using the other hand to insert the ear tag. Pay particular attention to the proper ear tag site. The two-piece tag is applied with a plier-type applicator by squeezing the handles until the ear tag snaps together.
9. Treat the pierced ear around the tag with an antiseptic to prevent infection and fly irritation or soak the tag and button prior to application.
10. Release the animal.

## HOT BRANDING

Advantages - Easy to read; Unique to producer; Can be used on any color cattle; Permanent.

Disadvantages - Lowers the market value of the hide. It can also be very difficult to read, especially on haired cattle. Stressful for cattle.



Equipment Necessary -

- Branding Irons
- Small propane tank with burner or wood fire
- Squeeze Chute
- 30-gallon Drum

Procedure -

1. Assemble and prepare the necessary equipment. The iron used in hot branding should be iron or steel, and should be free of dirt and hair.
2. Heat the branding irons. The lowest cost method of heating branding irons is to use the hot coals of a wood fire. A second and more convenient way to heat irons is to use a small propane tank and burner. A third method is to use electric branding irons.
3. Restrain the animal in a squeeze chute. Most chutes are designed with hinged side bars that allow access to the hip and shoulder regions of the animal. One or two of these should be lowered to allow access.
4. Put on a pair of leather gloves to prevent burning your hands when handling hot irons.
5. Take the branding iron out of the fire or drum and check the number or character to be used to be sure it is the right one.
6. Check the irons for temperature. The amount of heat required for a good brand is difficult to describe. The color of the hot iron is a good indicator of the temperature. A black iron is too cold. A red-hot iron is too hot. Using this type of iron causes a large sore, which results in an indistinct or blotched brand. An iron that is the color of gray ashes is at the proper temperature to do a good job of branding.
7. Firmly press the ash gray colored branding iron against the hide **on the hip** and rock the handle slightly to vary the pressure and obtain uniform application of the entire character. The color of the branded hide should be light tan, or the color of a new saddle leather. If the cattle have a light hair coat and the iron temperature is correct, the time required to brand should only be 3 to 5 seconds. Don't brand wet animals as it will cause a blotched brand.
8. Apply one iron at a time. If two irons are applied at once by the same person, the chances of slipping and blotching the brand is increased greatly.
9. Place the iron back in the heat source as in step 2. Make sure the iron is clean.
10. Release the animal.

## **FREEZE BRANDING**

Advantages - Permanent;  
Limited Hide Damage.

Disadvantages - Takes  
more time to brand an  
animal, does not work on  
white cattle.



### **Equipment Necessary -**

- Copper or Copper alloy branders
- Liquid Nitrogen or Dry Ice Styrofoam Cooler
- 99% Isopropyl Alcohol
- Electric Clippers
- One Quart Squeeze Bottle
- Stiff Bristle Brush
- Clock (with second hand)

### **Procedure -**

1. Prepare the branders. They should be clean and free of debris.
2. Cool the irons in a refrigerant. One method is to place the branders in liquid nitrogen. Place 3 to 4 inches of liquid nitrogen into a Styrofoam cooler or insulated bucket before the irons are added. Second method of cooling branders involves placing them in a mixture of 99% isopropyl alcohol and dry ice. Both methods require more refrigerant to cool the branders initially than to re-chill between animals.
3. Fill the quart squeeze bottle with 99% isopropyl alcohol.
4. Restrain the animal in a squeeze chute.
5. Clip the area to be branded as closely as possible. A stiff bristle brush can be used to remove dirt and debris.
6. The irons are ready for use when the refrigerant stops boiling.
7. Put on a pair of leather gloves, take the brander out of the refrigerant, and check the character to be used to be sure it is the right one.
8. Check the clock to ensure the proper brand application time.
9. Liberally apply 99% isopropyl alcohol from the squeeze bottle over the branding site. Soak the area but don't waste alcohol.
10. Apply the brander to the clipped, alcohol-soaked area and apply pressure to the brander by leaning on it. The minimum time of application for dark cattle is 30 seconds. For white cattle you must apply brander for approximately 2 ½ minutes to kill the hair follicles.
11. Place the brander back into the refrigerant and make sure that the refrigerant covers the iron. If it does not cover the irons, add more liquid.
12. Release the animal.

## Recognizing Illness

How do you know if an animal is healthy or not? One of the keys is to understand what is normal so that you can recognize what is abnormal. Once this skill is learned, it becomes easier to recognize abnormal behavior. This is a skill that develops after working with and caring for livestock over time. Deviation from normal can be an early indicator that something may be wrong. This knowledge and close observation allow early intervention. Some of the characteristics that serve as the basis for assessing animal health include *Normal Eating Behavior, Group (Herd) Behavior, Normal Vital Signs, Normal Fecal Pattern and Consistency, Sounds or Acoustical Communication, Normal Stance, Movement, Posture and Activity Patterns*

Keeping good records of feed and water intake, death loss, reproduction rate, and/or growth rate can help you notice if there is a health problem in your herd. Major changes over time may mean a disease is present. Managers should take time each day to drive through the herd and notice the cattle's actions and reactions. Monitoring health in farm animals that are mammals often includes assessing *vital signs* such as *body temperature, pulse rate and respiration rate*. The body's response to an infectious agent or some other problems often results in a change from normal in one or more of the vital signs. Recognizing these changes along with other symptoms may allow early identification and treatment of a problem before it gets out of hand. Body temperature is measured with a rectal thermometer while the animal is properly restrained and averages 101.5 (100.4 – 102.8) °F. Pulse is the surging of blood through arteries and is usually defined as the heartbeats occurring in a minute (bpm). It can be felt in the artery under the tail in cattle and averages 50 (40 – 70) bpm. In some animals you cannot feel the pulse, but you can feel the heart beating under the ribs, or you may use a stethoscope to listen to the heartbeat. Respiration rate can be measured by simply counting the expansion and relaxation of the rib cage and abdominal wall (averages 30 breaths/minute). It is also helpful to examine the mucous membranes (inner eye lid, inside the nostrils, inner lips and gums) checking for a moist, pink appearance. You can check for dehydration by pinching the skin on the side of the neck and releasing it. If the skin goes back into place quickly (less than 3 seconds), the animal has good skin pliability and is likely not dehydrated.

## Preventing Illness

While all animal owners will likely experience losses due to illness and death, there are many things that can be done to limit illness and injury. There are many disease prevention practices that cattle managers should follow. Some are listed below:

1. Purchase healthy animals.
2. Quarantine all newly acquired animals away from the rest of the herd for a minimum of thirty days to allow for cattle that have been exposed to a disease to show symptoms.
3. Isolate sick animals: give the correct medication at the correct dosage for the correct duration.
4. Work with your veterinarian to develop and follow an appropriate **herd health program** that involves the use of testing, vaccinations, and antiparasitic compounds.
5. Provide a constant supply of clean, fresh water.
6. Provide for the safety of your animals with proper fencing, predator control, vigilant repairschedule and preventing exposure to harmful chemicals.
7. Reduce stress by following proper handling procedures and maintaining good sanitation.
8. Provide appropriate nutrition for the age and stage of production of your herd.
9. Observe regularly in order to identify early signs of trouble.
10. Keep excellent records.

## Beef Cattle Health Supplies

Research the following items and practices to gain knowledge of their purpose in livestock production. Be prepared to identify these items and explain their use. Livestock equipment supply catalogs are a good study resource. Some have photographs on their web sites.

- |                            |  |
|----------------------------|--|
| ○ Antiseptic               | ○ Ear tag, tattoo, electronic implanter (ID) |
| ○ AI equipment             | ○ Hoof trimmers                              |
| ○ Bleach                   | ○ Mineral oil                                |
| ○ Balling gun              | ○ Needles                                    |
| ○ Blood stopper            | ○ Paint stick                                |
| ○ Epsom salts              | ○ Penicillin                                 |
| ○ Dewormer                 | ○ Probiotic                                  |
| ○ Emasculator/Elastrator   | ○ Stomach tube                               |
| ○ Ear tags                 | ○ Syringes                                   |
| ○ Disbudding iron/dehorner | ○ Thermometer                                |
| ○ Disinfectant             | ○ Iodine                                     |
| ○ Dose syringe             | ○ Vaccine                                    |
| ○ Drench bottle            |  |
| ○ Fly tag                  |  |

## Administering Medications and Vaccinations

As a routine part of herd health management, livestock producers must administer medicine. This is considered a critical control point in the production chain. The best way to avoid problems associated with this critical control point is simply to follow the drug's label and package insert and to identify each animal that receives the drug at the time you administer it. This way you won't forget to identify the animal and risk sending an animal to slaughter with tissue residues.

It is important to **administer** drugs properly. There are two key elements: (1) route of **administration** (the way you get it into the animal), and (2) dosage (the amount you give to the animal and the interval at which you give it). There are seven ways drugs can be **administered**:

- Oral
- Intramuscular
- Intramammary
- Topical
- Subcutaneous
- Intravenous
- Intrauterine

Each of these techniques may bring about undesirable behavioral responses so you must properly restrain the animal and protect yourself. Topical treatments may be dangerous to humans so you should wear gloves and follow all safety precautions of the manufacturer. Medications given by mouth may be fed, loaded into a balling gun, or mixed into a drench or a dose syringe. Care should be taken so that the animal does not choke, and fluids are not forced into the lungs.

# Injection Site Management

Intermediates and Seniors

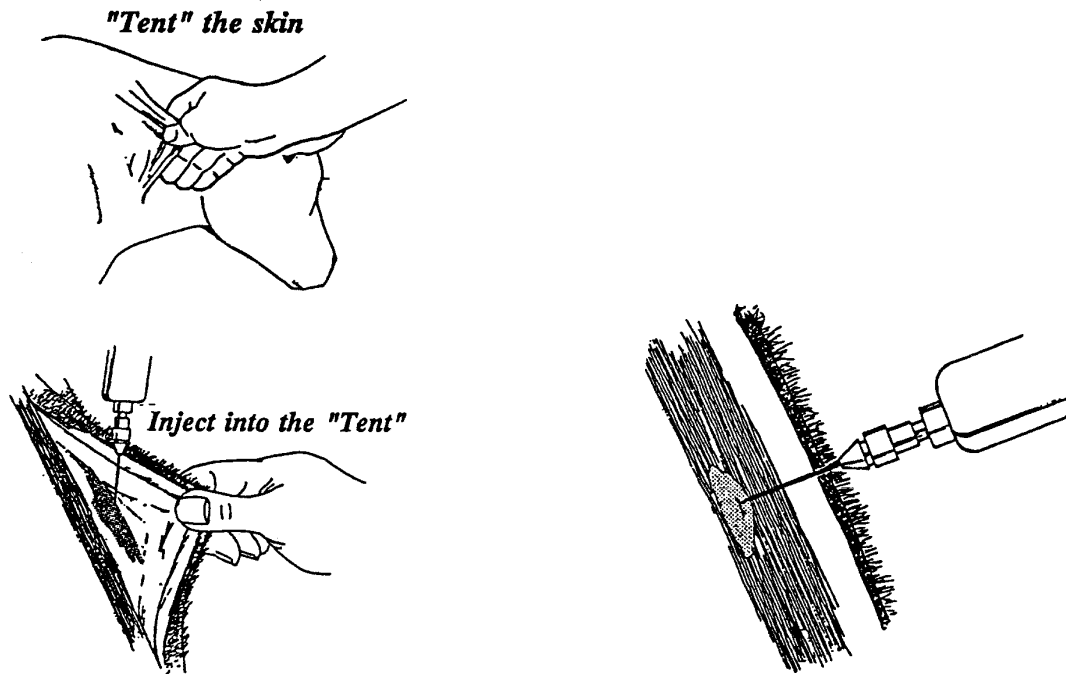
Selection of appropriate injection sites is very important for the well-being of the animal to avoid abscesses and nerve damage. Since most livestock eventually end up in the retail case, it is also important to choose injection sites wisely so there is no adverse effect on the products for sale. Problems and concerns for food safety fall under 3 areas: *injection site management*, *residue avoidance* (antibiotics, chemicals and feed contaminations) and *foreign object avoidance* (broken needles). The National Cattlemen's Beef Association has developed the **Beef Quality Assurance Standards** for beef cattle managers: <https://www.bqa.org/resources/manuals> . For a training video visit: <https://www.youtube.com/watch?v=4MwrabpLMWk>. Also, you can download the handbook: Florida Beef Quality Producer Program at: <http://edis.ifas.ufl.edu/an170>

Relative to injections, keep in mind the following:

- Products labeled for subcutaneous (SQ) administration should be administered SQ in the neck region (ahead of the shoulders). *As a last resort*, in the elbow pocket is an acceptable SQ site.
- All products labeled for intra-muscular (IM) use shall be given in the neck region only (no exceptions, regardless of animal age).
- All products cause tissue damage when injected IM. Therefore, all IM uses should be avoided if possible.
- Products cleared for SQ, intravenous (IV), oral or topical administration are recommended.
- Products with low dosage rates are recommended and proper spacing should be followed (4 inches apart).
- No more than 10 cc of product is administered per IM injection site.
- Use a BQA processing map to record information each time cattle are treated

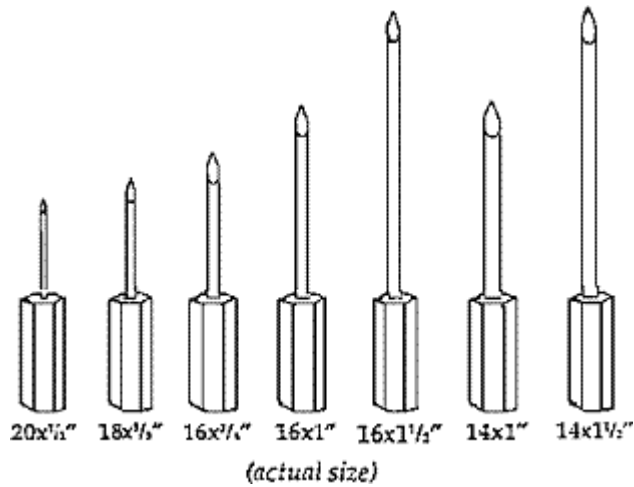


# Giving Injections



Subcutaneous "Tent" Method

Intramuscular Technique



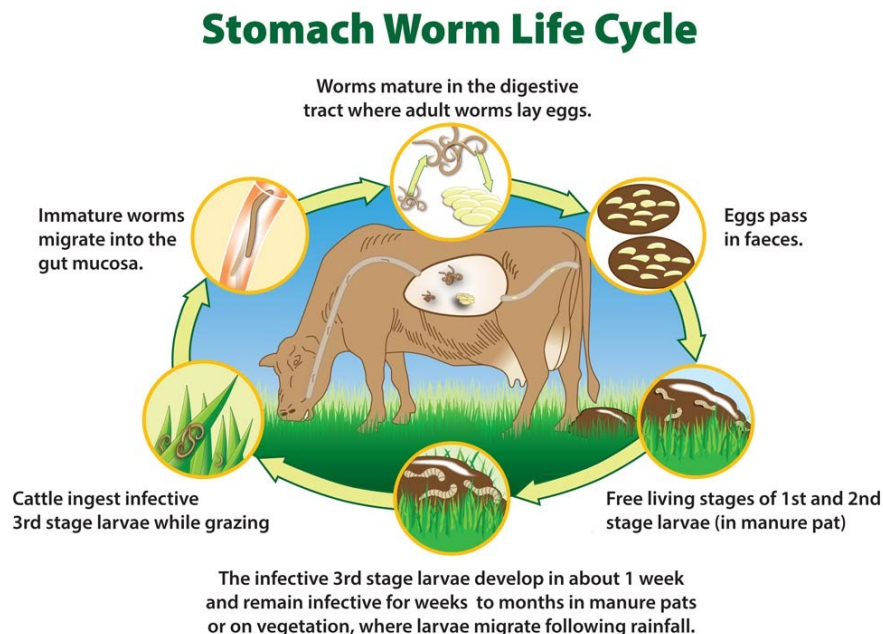
Investigate needle gauges to find the correct size for your project animal. (Gauge number increases as needle diameter decreases.)

## Internal Parasites in Cattle

Internal parasites are organisms which live in and feed on internal body tissue or fluid for at least a portion of their life cycle. One of the largest health concerns for one's cattle will likely be controlling internal parasites. Worms are a common internal parasite in cattle. Roundworms such as the brown stomach worm, are the major internal parasite concerns in cattle. Lung worms and tape worms can also infect cattle. Protozoal diseases, usually coccidiosis, can also be a problem in cattle. A healthy animal in a clean pen or pasture typically will not develop coccidiosis. Liver flukes can also be an issue in cattle.

Keep pens or pastures as clean as possible. This will help protect animals from parasites and disease. Worms and other internal parasites can rob the animal of weight gain and thriftiness. Several anthelmintics (dewormers) are approved to use in cattle. As with any drug, follow label directions.

Symptoms of internal parasite infestation in cattle include weight loss, diarrhea, anemia, depression, listlessness, fast breathing, and even bottle jaw. To diagnose parasite infestation, most will analyze a fecal sample under a microscope. For more information read these Extension publications: <https://agrillifeextension.tamu.edu/library/ranching/common-cattle-parasite/>, <https://extension.missouri.edu/publications/q2130>, and <https://dairy-cattle.extension.org/internal-parasites-in-beef-and-dairy-cattle/>.



## External Parasites in Cattle

External parasites live outside the body and feed on the skin/hair/skin/blood of the animal for at least one part of its life cycle. External parasites can make an animal extremely uncomfortable and affect weight gains. Black flies, horn flies, horse flies, deer flies, sand flies, stable flies, cattle grubs, lice, mites, mosquitos, and ticks are a common external parasite in cattle. Insecticides are available to treat external parasites in some cases, check with your veterinarian or county Extension agent for advice. For more information on external parasites read this publication: <https://edis.ifas.ufl.edu/publication/IG130>.

## Estimating Body Weight

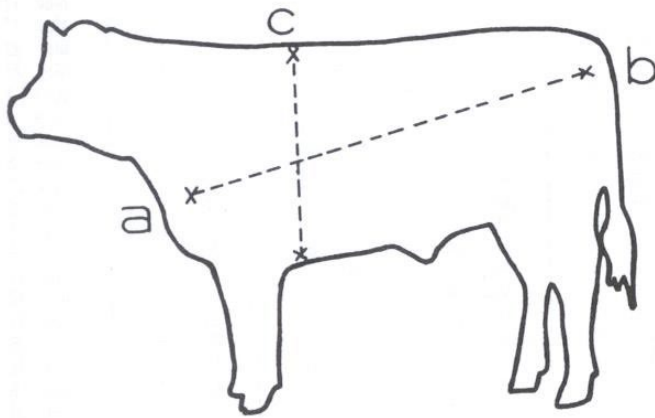
One challenge in administering medications is determining the proper dose. Many medications base the dose on the animal's body weight. If you do not have a scale available, you should have a method of estimating weight that is fairly accurate, so you do not overdose or underdose your animal. Always follow label directions. Too much of a good thing is often very bad but underdosing of products like dewormers can speed up resistance by the parasites. There are weight tapes available that are fairly accurate, or you can measure your animal and calculate weight.

Step 1: Measure the circumference (heart girth) from a point slightly behind the shoulder blade, hence down over the foreribs and under the body, behind the elbow (distance C of figure below).

Step 2: Measure the length of body, from the point of the shoulder to the point of the rump (pinbone), in inches (distance A-B of figure below).

Step 3: Take the values obtained in steps 1 and 2 and apply the following formula to calculate body weight:

$$\text{Heart girth}^2 \times \text{body length} \div 300 = \text{weight in pounds}$$



## Calculating Dosages

Read medication labels carefully when calculating doses.

Example 1: Your 500 pound weaned calf needs to be treated for internal parasites. The recommended dose is 1 ml/100 pounds body weight of dewormer. How much dewormer should you administer to your calf?

$$500\text{lb} \times 1\text{ml}/100\text{lb} = 5\text{ml}$$

Example 2: A 300 pound sick animal requires an antibiotic injection at a dosage rate of 2,500 units/pound. The antibiotic to be used contains 150,000 units/ml. How much antibiotic should the producer give to the animal?

Step 1: Calculate how many units a 300 pound animal needs.

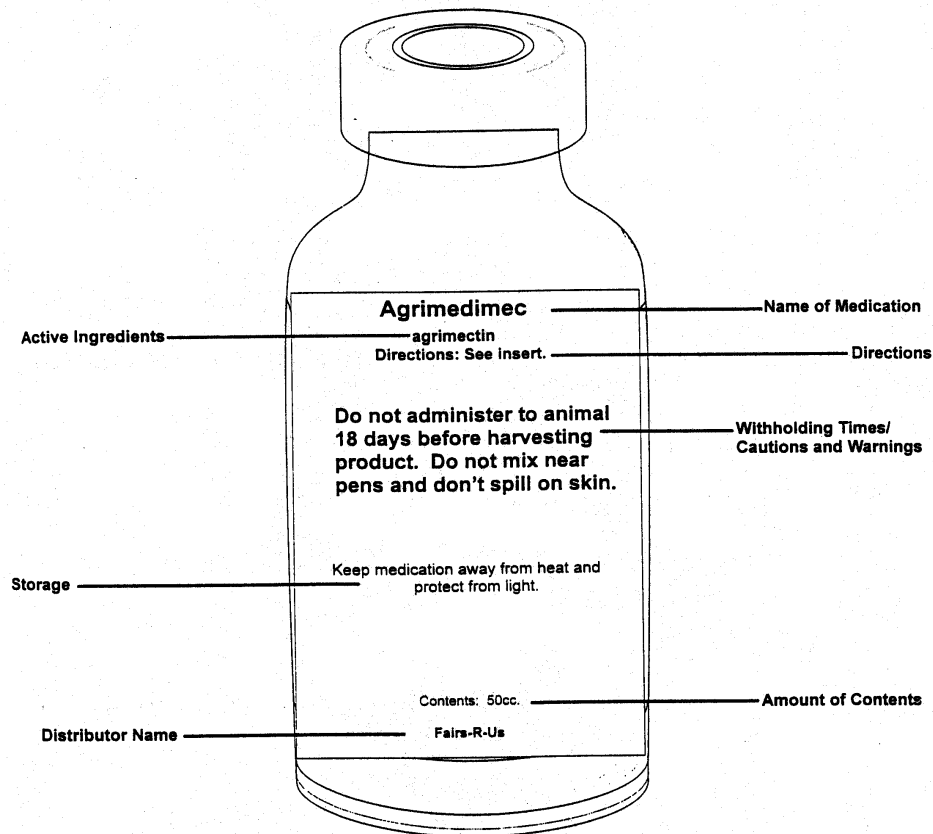
$$2,500 \text{ units/lb} \times 300 \text{ lbs} = 750,000 \text{ units}$$

Step 2: Calculate how many mls. of the antibiotic would deliver the units needed.

$$750,000 \text{ units} / 150,000 \text{ units/ml} = 5 \text{ mls.}$$

## Medication Labels

Manufacturers of pharmaceutical products follow strict guidelines in labeling their products. Understanding what is on the label and how to use the information is a critical skill for livestock health care management. Using the picture shown here, study the labels on the products you routinely use on your project animals.



The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee, warranty, or endorsement of the products named and does not signify that they are approved to the exclusion of others.

# Medication Calculations

<b>Seniors</b>
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Be prepared to read a medication label and calculate when to administer booster shots, withdrawal times, etc.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3 Gave Animal Antibiotic Shot	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18 Harvested Animal	19	20	21
22	23	24	25	26	27	28
29	30					

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

**QUESTIONS:**

Looking at the first calendar, if a medication that had a 32 day withdrawal time was administered on the 3rd, is it proper protocol for the animal to be harvested on the 18th? Why?

Using the calendar above, when could your animal safely be harvested if administered the antibiotic on the 3rd?

# Cattle Diseases

Seniors

- Name: Brucella Abortus Disease
  - Common Name: Brucellosis
  - Cause: Bacteria, *Brucella abortus*
  - Major Symptoms: Abortion of first calf in last third of pregnancy and retained afterbirth. Some infected cows show no signs, but calves may be born weak.
  - Prevention: Testing for the disease at stages in the cattle's life, such as on the farm, at the stock market, and at the slaughter facilities. Once infected, animal should be culled. If more than one is infected, the whole herd should be quarantined. Good herd management and regular vaccination can help with prevention of outbreaks. Note: Florida is currently a "Brucellosis freestate".
  
- Name: Bovine Respiratory Syncytial Virus
  - Common Name: BRSV
  - Cause: Virus
  - Major Symptoms: Temperatures of 103-105 degrees F, coughing, and some nasal discharge. In adult cattle that are susceptible, clinical signs are fewer and usually aren't noticed until the cattle begin collapsing and die within a few hours.
  - Prevention: Vaccination when an outbreak has occurred will only aid in slowing down the spreading of the virus. If the herd is known to not be infected, then vaccination will help in preventing an outbreak.
  
- Name: Infectious Bovine Rhinotracheitis
  - Common Name: IBR, or Red Nose
  - Cause: Virus
  - Major Symptoms: Watery to yellow colored discharge from the nose and eyes along with coughing, increased respiration rate and fever. This infection usually follows or is included with other infections such as BVD and or BRSV. So, many of the vaccines come with a strain of the IBR virus to aid in prevention.
  - Prevention: Vaccination
  
- Name: Bovine Viral Diarrhea
  - Common Name: BVD or BVDV
  - Cause: Virus
  - Major Symptoms: Cattle infected with this disease do not usually show any symptoms, but the immune system is weakened, and other diseases are more likely.
  - Prevention: Good herd management and good sanitation are the best ways to combat this disease. Vaccination will help prevent outbreaks but will not stop the infection.

- Name: Parainfluenza 3
  - Common Name: PI3
  - Cause: Virus
  - Major Symptoms: Watery to yellow-colored discharge from nose and eyes, coughing, fever, and an increase in respiration rate.
  - Prevention: PI3 usually infects cattle that are already infected with other diseases such as IBR, BVD, or BRSV so a strand of PI3 is usually pre-mixed with another vaccine. Along with vaccination, good herd management is needed along with good sanitary practices to prevent an outbreak.
  
- Name: Leptospirosis Common Name:
  - Cause: Bacteria, *Leptospira interrogans*, subclassification, “serovars” hardjo
  - Major Symptoms: Infected cattle with a chronic or long-lasting infection will usually abort the fetus, have a stillborn, or give birth to a weak calf. In rare acute infections, often in calves, the signs are high fever, jaundice (yellowing of the skin), and death.
  - Prevention: Regular herd vaccinations twice a year will help along with the vaccination of any new replacement heifers or bulls. In chronic cases, once abortion has occurred it is too late to vaccinate.
  
- Name: Clostridial Disease
  - Common Name: Blackleg
  - Cause: Bacteria, *Clostridium chauvoei*
  - Major Symptoms: Depression, swelling of muscles or groups of muscles, skin may become discolored and crackle when touched. Adult cattle may show signs of lameness before any other signs appear. Many calves are found dead before any signs appear.
  - Prevention: Vaccination of the whole herd is important, not just for *Clostridium chauvoei*, but for all *Clostridium* bacteria. This is accomplished through vaccinating with 7 or 8 way *Clostridium*.
  
- Name: Bovine Spongiform Encephalopathy
  - Common Name: BSE, “Mad Cow Disease”
  - Cause: Prion, an abnormal form of a normal protein
  - Symptoms: Cattle tend to show signs of progressive degeneration of the nervous system and changes in temperament. Abnormal posture, incoordination and difficulty rising are also observed due to the degeneration of the nervous system. There is a decrease in milk production and a loss in body weight, but there is no loss of appetite.
  - Prevention: There is no cure for BSE, but there are some guidelines to help prevent an outbreak. Do not feed meat bone meal, or other feed stuff that contains parts from ruminants. Ensure good slaughter and processing procedures so as not to contaminate edible products. Though BSE is not contagious, monitoring the offspring of an infected cow is recommended, even though the transmission of the prion from cow to calf is low. Finally, the humane destruction of infected cattle to prevent any possible spreading due to contamination is required. Still rare in the United States.