LIVESTOCK ACHIEVEMENT PROGRAM
FRESNO COUNTY 4-H

BEEF CATTLE STUDY GUIDE
LEVEL 1, 2, & 3
PARTS OF THE BEEF ANIMAL

Level 1, 2, & 3

1. muzzle
2. face
3. forehead
4. poll
5. throat
6. dewlap
7. brisket
8. neck
9. point of shoulder
10. shoulder
11. top of shoulder
12. elbow
13. forearm
14. knee
15. cannon
16. dewclaw
17. hoof
18. lower forerib, fore flank
19. forerib
20. back or top rib
21. rib
22. loin
23. hook or hip
24. rump
25. pin bone
26. tailhead
27. quarter
28. stifle
29. rear flank
30. switch
31. hock
32. pastern
33. udder (cow, heifer), cod (steer), scrotum (bull)
BREEDS OF BEEF CATTLE
Level 1, 2, & 3
The following breeds and their crosses are popular in our area:

English Breeds
  Angus
  Hereford
  Shorthorn
Continental Breeds
  Charolais
  Maine Anjou
  Simmental

The Angus breed originated in the northeastern part of Scotland. When George Grant transported four Angus bulls from Scotland to the middle of the Kansas prairie in 1873, they made a lasting impression on the U.S. cattle industry. When two of the George Grant bulls were exhibited in the fall of 1873 at the Kansas City (Missouri) Livestock Exposition, some considered them "freaks" because of their polled (naturally hornless) heads and solid black color (Shorthorns were then the dominant breed). The first great herds of Angus beef cattle in America were built up by purchasing stock directly from Scotland. Twelve hundred cattle alone were imported, mostly to the Midwest, in a period of explosive growth between 1878 and 1883. Over the next quarter of a century these early owners, in turn, helped start other herds by breeding, showing, and selling their registered stock. Angus are known for fertility, calving ease, mothering ability, resistance to pink eye because of dark skin pigmentation, and propensity to marble (distribute fat within the meat) more than any other breed thus producing a high quality carcass. The Angus breed has the largest branded-beef program, Certified Angus Beef, in the world. Angus cattle are black but there is also a Red Angus breed. Angus are polled.
The Hereford breed was founded near Hereford in the County of Herefordshire, England. Thrifty and enterprising farmers were determined to produce beef for the expanding food market created by Britain's industrial revolution. To succeed in Herefordshire, these early-day cattlemen realized they must have cattle which could efficiently convert their native grass to beef and do it at a profit. There was no breed in existence at the time to fill that need, so the farmers of Herefordshire founded the beef breed that logically became known as Herefords. These early Hereford breeders molded their cattle with the idea in mind of a high yield of beef and efficiency of production, and so firmly fixed these characteristics that they remain today as outstanding. Hereford cattle are known for fertility, feed efficiency, good disposition, adaptability and hardiness. Hereford cattle are red with white faces. Hereford cattle have horns; Polled Hereford cattle do not.

The Shorthorn breed originated on the northeastern coast of England. Although Shorthorns came first, in the 1870’s breeders discovered ‘natural hornless’ cattle occurring from time-to-time in horned herds. Thus, Polled Shorthorns were discovered and were the first major beef breed to be developed in the United States, having gained its origin in 1881 in Minnesota. Polled Shorthorns possess the same qualities for adaptability, mothering ability, reproductive performance, good disposition, feed conversion, longevity and popularity as their horned counterparts. Shorthorn cattle are red, white, or roan in color. Shorthorns are horned or polled.
The Charolais breed originated in France. The exact origins of the Charolais are not known but it must have been developed from cattle found in the area. Selection developed a white breed of cattle which, like other cattle of continental Europe, were used for draft, milk, and meat. It has been said that no other breed has impacted the North American beef industry so significantly as the introduction of Charolais. The Charolais came into widespread use in the United States cattle industry at a time when producers were seeking larger framed, heavier cattle than the traditional British breeds. Charolais are known for size, ruggedness, outstanding muscling, growth, and cutability. Charolais cattle are white or creamy white in color. They are horned or polled.

The Maine-Anjou breed originated in the northwestern part of France. Breeders of the cattle were mostly small farmers whose goal was to maximize income from their small area of land. For this reason, the Maine-Anjou evolved as a dual-purpose breed, with the cows used for milk production and the bull calves fed for market. The first Maine-Anjou imported into North America came to Canada in 1969. These cattle were then introduced to the United States through artificial insemination which minimized any undesired traits. This systematic crossbreeding strategy has been put into effect by breeding more Black Angus into the Maine-Anjou. The Maine-Anjou have good dispositions, are feed efficient, large cattle that provide high cutability and marbling qualities. Maine-Anjou cattle are traditionally very dark red with white markings on the head, belly, rear legs and tail. White on other parts of the body is also common. Today, however, they are more solid in color pattern with black, red, and black and white being the popular choice. They can be horned or polled.
The Simmental breed of cattle originated in Switzerland. The ability to adapt to its environment has allowed them to become influential in cattle markets across the world. Simmentals were developed at a time that cattle were multipurpose, raised for their meat as well as their heavy milking ability and even draft uses. They are rugged animals with substantial bone and they have fast growth rates. Cows are excellent mothers and have very long production cycles. Though their milking abilities have not been selected for, the Simmental continues to be an above average milker. They are docile and have excellent weight gaining abilities. The carcass yield is very good, with meat grading high. The original color for Simmentals was red and white or gold and white. All colors and all color patterns are accepted within the American Simmental Association. Simmental cattle are naturally horned but through crossbreeding and upbreeding, they may also be polled.
In order to evaluate and select beef cattle, you must have an understanding of the parts of the beef animal as well as the desirable characteristics. Visual appraisal can be a good indicator of the frame size, muscle and body structure, predisposition to put on fat, feet and leg structure and breed character. When evaluating cattle, consider the structure, muscling, body capacity, style, balance, and movement of the animal. In addition to those areas, special consideration should be given to the soundness of feet and legs, breed and sex characteristics, and reproductive organs when evaluating breeding animals.

**Structure**
Strong bone and correct skeletal structure is important and essential for any animal getting to feed and water. You can observe structure in: the angle of the shoulder, levelness of top line and hip, pastern angle, and movement. An animal must be structurally correct and sound on their feet and legs, which enables them to move about comfortably and easily.

**Terms Used to Describe Structure**
A number of terms are used to describe the feet and leg structure of an animal.

**Pigeon Toed or Bowlegged** - When viewed from the front or rear, the knees are set too far out, causing the toes to turn inward.

**Splayfooted or Knock Kneed** - When viewed from the front, the knees are set too close together and the feet toe out away from each other. This problem is often seen in extremely light-muscled, narrow-chested cattle when the legs are naturally set too close together.

**Cow Hocked** - When viewing the hind legs from the rear, the hocks are turned inward or are placed too close together, causing the toes to turn outward.

**Sickle Hocked** - When viewing the rear legs from the side, the hock has too much angle or set, causing the steer to stand too far underneath himself. Often these calves will droop excessively from hooks to pins.

**Post Legged** - The hock has too little angle or set. The calf is too straight through the joint, resulting in very stiff, restricted movement because of the lack of flexibility. More cattle become unsound because of being post legged than sickle hocked.

**Buck Kneed** - When the calf is "over at the knees" or buck kneed, full extension of the knee cannot occur. When observed from the side the legs appear slightly bent. This is usually seen in cattle that are too straight in the shoulder.

**Calf Kneed** - This is the other extreme, the opposite of buck kneed, where the calf stands "back at the knees" when viewed from the side.
Front Leg Alignment

- Bowlegged
- Knocked-kneed
- Sprayfooted (toed out)
- Pigeon-toed (toed in)
- Correct

Front Leg Set

- Correct
- Over at the knee (buck kneeed)
- Back at the knee (calf kneeed)
- Weak pasterns
Rear Leg Alignment

- Bowlegged
- Correct
-Cow hocked

Rear Leg Set

- Extremely straight (posty)
- Correct
- Extremely curved (sickled)

Acknowledgements:
Illustrations were taken from “Pennsylvania 4-H Livestock Judging Manual”
Muscling
Muscling is important in beef cattle. Heavily muscled animals produce more meat and less fat. You can see indications of muscling over an animal’s top, in the loin area, length of hip, width of stifles, and in the hind quarters.

Body Capacity and Performance
The capacity or volume of a beef animal indicates how well the animal may perform. You want a deep bodied animal, which can consume large amounts of feed. Indicators of capacity and performance are width of chest floor, width across shoulder blades, ribcage (length, depth and shape or spring), and depth of flank. Higher volume cattle are generally easier fleshing and lower maintenance.

Style and Balance
When evaluating the style and balance of a beef animal, consider its eye-appeal. Note how the body parts blend together, how well-proportioned the animal is front to rear, and how uniform it is in its muscling, trimness, and skeletal structure.

Movement
When a beef animal moves, it should walk freely and easily. The legs should track correctly, meaning that the back feet step into the tracks left by the front feet. The animal should walk wide, indicating adequate muscling.

Age and Weight
Most calves are weaned at about 7 to 8 months of age and placed on feed between 6 and 10 months of age. When selecting a feeder calf, consider that calves weighing 500 - 650 pounds at the time of selection and placed on feed for 270 days, will usually reach the correct finish and weight of 1150-1330 pounds between 18 and 20 months of age. When selecting a breeding heifer,
IDEAL MARKET STEER
Level 1, 2, & 3

Age 18-24 months
Live weight 1150-1330 lbs
Fat thickness 0.35-0.50 inch measured between 12th and 13th rib
Ribeye area 12 – 15 square inches
Quality grade USDA Choice
IDEAL BREEDING HEIFER
Level 3

Age at breeding: Typically 16 – 18 months
Size at breeding: Heifer should be at least 2/3 of her expected mature body size and weight when bred
Structurally correct: Sound on legs and feet; deep bodied
Feminine characteristics: Refined head, long trim neck, smooth through the shoulders

LivestockJudging—BeefCattle
Level1,2,&3

Livestockjudgingprovides4-Hmemberswithanopportunitytousetheirknowledgeofcorrect
beef cattleconformationtoevaluateandplaceaclassofanimals. Level3memberswillalsopresent
oralreasonsinordertoexplainanddefendtheirplacementoftheclass.
Byjudginglivestock,memberslearn:

• Howtoevaluatetheconformationofdifferentbreedsandclassesofbeefcattle
• Howtotendtheirplacingsthroughthedeliveryoforalreasons

Includedbelowisasuggestedoralreasonsformat. Memberscaninserttheinformationfromthe
classthey’rejudgingandusetheformattohelptheprepareandpresenttheir“reasons”.

**Introductory Guide to Reasons Format**
View the entire manual at the above listed website

I placed the ______________________       ______________________  
(class name)                            (the placing order, ie. 3-1-4-2)

I chose to start the class with the pair of ______________________.
(positives about the top pair)

however, the ______________________       ______________________  
(positive about top individual)           (# of class winner, ie. #3)

lead me to place him/her over ______________________ in my top pair.
(second place animal, ie. #1)

____________________ is a  _______________________________. In
(class winner) (positive terms about class winner)

addition, he/she is ________________________________ than
(positives comparing class winner to second place animal)

______________________________. I admit that ______________________
(second place animal) (second place animal)

is ________________________________, but he/she is ______________________ 
(grants or positives for second place animals over class winner) (negatives about second place animal)

and I left him/her second.
However, in my middle pair, the ________________ of
(advantages of second place animal)

_________________ left him/her over __________________________. He/She is
(second place animal) (third place animal)

_________________ than _________________.
(positives of second place over third place animal) (third place animal)

Furthermore, he/she is _______________________________. Although
(positives of second place animal)

_________________ is ______________________________, he/she is
(third place animal) (grants or positives of third place animal)

_________________, therefore, I placed him/her third.
(negatives of third place animal)

Even so, in bottom pair I chose to place ___________________ over
(third place animal)

_________________________. He/She is _______________________________.
(fourth place animal) (positives of third place animal over fourth place animal)

At the same time, he/she is ________________________________. I
(more positives about third place animal over fourth place animal)

grant that __________________ is __________________________, but this does not
(fourth place animal) (grants or positives about fourth place animal)

make up for the fact that he/she is __________________________ and therefore is
(negatives about fourth place animal)

placed at the bottom of this class.
For cattle to do well, they need facilities that offer room to move freely, are clean, offer protection from the weather, have access to clean fresh water and feed, and are made strongly enough to keep mature cattle safely contained. The suggested minimum pen size is 100-120 square feet for a pen for one animal, with extra space available for exercise. For cattle on pasture, the number of animals per acre varies depending on the condition of the pasture.

For show steers and heifers, some 4-H members house them in pens that are shaded and have fans or other cooling systems to keep cattle cool. The cattle can be turned out into a larger pen at night to get exercise. This method helps to keep cattle cool, clean, and comfortable. A blocking chute or a tie-post, and easy access to running water are helpful to have if you are raising show cattle so you can easily restrain and groom your cattle.

It's important that any facilities used for cattle are safe for the animals and the handlers.

BEEF CATTLE TERMS
Level 1 & 2

1. **Bloat** – excessive gas build-up in the rumen (stomach)
2. **Bull** – male cattle
3. **Calf** – young cattle, under one year of age
4. **Carcass** – body of animal after it has been slaughtered, skinned, and the insides removed
5. **Castrate** – removal of testicles of male cattle
6. **Concentrate** – feed stuffs, such as grain, that are low in fiber and high in digestible nutrients
7. **Condition** – degree of fatness in a meat animal
8. **Conformation** – shape and design of the body
9. **Cow** – mature female cattle
10. **Crossbreeding** – mating of purebred cattle of different breeds
11. **Cutability** – the amount of red meat in a carcass; a carcass with high cutability would have a high percentage of meat compared to fat
12. **Dehorn** – removal of horns
13. **Disposition** – temperament and attitude of an animal when handled
14. **Dressing percentage** – carcass weight divided by live weight multiplied by 100
15. **Feed efficiency** – comparison of the amount of feed that must be eaten in order to achieve a pound of gain in weight; cattle average 6 lbs. of feed to gain one pound of weight.
16. **Fill** – amount of feed and water in an animal
17. **Heifer** – female cattle under 3 years of age that has not produced a calf
18. **Marbling** – flecks of fat distributed throughout meat, used to determine quality grades
19. **Off feed** – to stop eating or eat very little
20. **Polled** – cattle born without horns
21. **Quality Grades of Beef** – Prime, Choice, Select, Standard, Commercial, Utility, Cutter, Canner (USDA grades)
22. **Ration** – total feed given during a 24 hour period
23. **Ribeye** – measured between the 12th & 13th rib on beef carcass; most reliable indicator of muscling in a carcass
24. **Roughage** – feeds high in fiber (hay, silage, grass)
25. **Scours** – diarrhea or loose running manure
26. **Steer** – male cattle that has been castrated
BEEF CATTLE TERMS

Level 3 (May also include Level 1 & 2 terms)

27. **Antibiotics** – Substances made from organisms that can kill bacteria; used to fight diseases caused by bacteria

28. **Artificial Insemination (AI)** – Placing the semen from a bull into a cow’s reproductive tract using an artificial method

29. **Average Daily Gain (ADG)** – Calculated by: Final Weight – Beginning Weight divided by the number of days on feed; important indicator of an animal’s feed efficiency

30. **Bio-security** – A series of management procedures designed to prevent or greatly reduce the risk of introducing new infectious agents to a farm

31. **Brand** – Permanent marking on skin caused by scar tissue

32. **Cod** – Scrotum of steer that contains fat

33. **Colostrum** – Thick, yellow milk (first milk) produced by a cow the first few days after calving; high in antibodies that give the calf protection against diseases; higher in protein and vitamins than regular milk

34. **Condition** – Degree of fatness in a breeding animal

35. **Conformation** – Shape and structure of the body

36. **Cull** – Animal taken out of herd because below herd standard

37. **Dam** – Mother of calf

38. **Dressing Percentage** – The proportion of carcass weight relative to live weight of an animal (carcass weight divided by live weight); average dressing percentage of beef is 62%

39. **Estrous Cycle** – The reproductive cycle of the female that prepares an egg for fertilization; average length of a cycle in cattle is 21 days.

40. **Estrus (heat)** – The part of the estrous cycle when a female may be successfully bred.

41. **Finish** – Amount of fat cover on a market animal

42. **Gestation** – Period of time cow is pregnant with calf (average 283 days)

43. **Lactation** – Period of producing milk

44. **Pedigree** – Written statement giving the record of an animal’s ancestry

45. **Registered** – Purebred animals whose pedigree is recorded with a breed registry

46. **Replacement Heifer** – A female selected to keep for use in a breeding herd

47. **Sire** – Father of a calf

48. **Wean** – To take the calf from its mother; usually 6-8 months of age for beef cattle

49. **Yield Grades** – Used to evaluate the amount of red meat in a carcass (Yield grade 1, 2, 3, 4, 5, with Yield grade 1 having the most meat and least fat.)
BEEF CATTLE EQUIPMENT ID

Level 1 & 2

Members should be able to identify the following equipment & supplies:

- Blocking Chute
- Branding Iron
- Clipper Blades
- Disposable Needle
- Disposable Syringe
- Ear Tag
- Ear Tag Applicator
- Electric Blower
- Electric Branding Iron
- Electric Clippers
- Feed Pan
- Hair Dressing (Show Sheen, Final Bloom)
- Neck Rope
- Rice Root Brush
- Rope Halter
- Scotch Comb
- Show Halter
- Show Stick
- Spray Adhesive
- Spray Bottle

Level 3

Members should be prepared to identify and describe use of Level 1 & 2 equipment as well as the equipment listed below:

- A.I. Pipette
- Eye Patch
- Balling Gun
- Obstetrical Chain
- Calf Drencher
- Squeeze Chute
- Calf Snare
- Cattle Magnet
- Dehorner
- Elastrator
Members should be able to identify the following types of feed:

Alfalfa hay
Barley
Beet pulp
Calf Manna
Corn
Cottonseed hulls
Fat supplement
Grass hay
Oats
Oat hay
Winter forage hay
Members should be able to read and understand the information on a feed label/tag and be able to identify if the feed is considered a starter, finisher, or maintenance feed.

Feed tags provide important information about the nutrients and ingredients contained in a feed. All commercially prepared feed must include a label or tag. It’s important to understand the information contained on a feed tag in order to be sure you’re providing your animal with the proper nutrition for its needs.

Livestock feeds are classified as concentrates, complete feeds, or supplements. According to the American Feed Control Officials Model Bill publication, 2005, the definitions are as follows:

**Concentrate** – “a feed used with another to improve the nutritive balance of the total (feed) and intended to be further diluted and mixed to produce a supplement or a complete feed.” 1

[Example of a concentrate feed would be steer finisher, which is designed to be fed in a daily ration along with forage/roughage (grass or hay) and (drinking) water.]

**Complete Feed** – “a nutritionally adequate feed that is compounded to be fed as the sole ration and is capable of maintaining life and/or promoting production without any additional substance needed except for (drinking) water.”

**Supplement** – “feed used with another to improve the nutritive balance or performance of the total ration and intended to be fed (either) a) undiluted as a supplement of other feeds, b) offered free choice with other parts of the ration separated available, or c) diluted and mixed to produce a complete feed,” 2 (depending on the manufacturer’s labeling).

[Supplements are products that are added or mixed into feed. They supply additional nutrients that your animal may need to grow and perform at its best. Supplements are usually added in small, specified amounts and are not fed as the total ration.]

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1 “Feed Analysis: It’s All About Energy”, [http://extension.psu.edu/animals/camelids/nutrition/feed-analysis-its-all-about-energy](http://extension.psu.edu/animals/camelids/nutrition/feed-analysis-its-all-about-energy)

2 “Feed Analysis: It’s All About Energy”, [http://extension.psu.edu/animals/camelids/nutrition/feed-analysis-its-all-about-energy](http://extension.psu.edu/animals/camelids/nutrition/feed-analysis-its-all-about-energy)
Reading a Feed Label/Tag

Level 3

Feed companies are required to provide certain information on every bag or package of product sold. The information is always listed on the label in the order it appears below.3

Product Name and Brand Name

Purpose of Feed – lists the species and animal class for which the feed is intended

Purpose of Medication and Active Drug Ingredients – if a drug is present in the feed, the word “medicated” must appear below the name of the feed with a statement and purpose of the medication, followed by a listing of the active drug ingredients and the amount of drug in the product

Guaranteed Analysis – gives information on the nutrients in the feed including the minimum percentages of 1) crude protein, 2) fat, and 3) fiber as well as 4) the minimum and maximum percentage of calcium, 5) the minimum percentage of phosphorus, 6) the minimum and maximum percentage of salt, and 7) the minimum Vitamin A in International Units (IU) per pound. This information is always listed on the feed tag in the same order as listed above. Additional guarantees may be included for other trace minerals, vitamins, specialty ingredients, or other nutrients depending on the product or species being fed.

Ingredient Statement – lists the ingredients in order starting with the ingredient that makes up the biggest proportion of the feed down to the ingredient that makes up the smallest proportion of the feed.

Feeding Instructions – include information on how much of the feed should be fed per day. If the feed is medicated and has a withdrawal time, a “warning” or precautionary statement is included as well.

Manufacturer Information – includes the name and address of the company that made or distributed the feed.

Net Weight Statement – tells how many pounds or kilograms of feed are in each bag.

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BEEF CATTLE NUTRITION
Level 3

Beef cattle need certain nutrients every day in order to stay healthy and grow. The nutrients needed are: Water, Energy, Protein, Minerals and Vitamins.

Water is the most important nutrient. It helps the body function properly. Cattle will drink as much as 20 gallons of water a day. Water should be fresh, clean, and cool to encourage cattle to drink.

Energy includes carbohydrates and fats. Energy helps cattle grow and maintain their body condition. It also helps in calf development during pregnancy. Grain, such as corn, barley, wheat, and oats are high in energy. Starter feeds for cattle are generally lower in energy and fat (2.5-3.0% fat) than Finishing feeds (3.5 – 5% fat).

Protein produces muscle (meat) and helps with growth. Protein sources for cattle include soybean meal and cottonseed meal. Starter feeds for cattle are generally higher in protein (14% protein) than Finishing feeds (12% protein). Heifer feeds are generally higher in protein (14+% protein) to encourage growth.

Minerals help to build strong bones and teeth and are needed to make blood, muscle, and nerves. Some necessary minerals for cattle include salt, calcium, and phosphorus. Trace minerals are those that are needed in a small amount and include iron and copper. Commercial show cattle feeds contain the proper amount of minerals but cattle on pasture or rangeland should be supplemented with mineral blocks or tubs.

Vitamins help the body to function properly. Commercial show cattle feeds contain the proper amount of vitamins. Alfalfa hay and green grass are also good sources of vitamins.

BEEF CATTLE DIGESTION
Level 3

Cattle, sheep, and goats are examples of ruminant animals. A ruminant is described as “an animal that has four stomach compartments – 1) rumen, 2) reticulum, 3) omasum, and 4) abomasum.

Ruminants, such as cattle, are able to digest large amounts of grass, hay, other roughages and low quality feeds and transform that feed into muscle (meat) or milk. Because of their specialized digestive system, ruminants can make use of feeds that other animals and humans cannot digest. Cattle swallow roughage before it has been completely chewed. The partially chewed food travels down the esophagus and enters the rumen. Bacteria and other microbes found inside the rumen help to break down roughage and release the nutrients found in the feed. Later, the animal will regurgitate the food (the “cud”) and continue to chew. This action helps to further digest the feed. The reticulum, which is a part of the rumen, helps the animal digest food after it is swallowed again. The omasum helps in digestion and squeezes water from the feed. The abomasum produces digestive juices that help move the feed to the small intestine and then into the large intestine. The abomasum works much like a human’s stomach.

Calves and other ruminants are born with a small rumen because the milk they drink is digested in the abomasum. As the calf grows, its rumen develops so that by the time the calf is three months of age, the rumen is well-developed and the calf is able to digest roughages and other feeds efficiently.\(^4\)

Image from http://sci.waikato.ac.nz/farm/images/ruminant%20digestive%20tract.png

Beef Cattle Health and Management
Level 3

Depending on area, environment, and exposure to other animals, beef cattle are susceptible to a number of parasites and diseases. A list of these can be found on pp. 5.3-5.6 of the *Beef Resource Handbook*, but check with your cooperative extension agent or a veterinarian for diseases that are common in your area.

Knowing the symptoms of common cattle diseases is helpful, but preventing diseases and parasites is the most important way to keep beef cattle healthy. This can be done by:

- Keeping clean the area where cattle are housed and fed
- Providing proper feed and nutrition and clean, fresh water
- Properly vaccinating and deworming animals
- Using clean equipment for handling and doctoring animals
- Separating newly purchased animals from your existing animals for a period of time as recommended by your veterinarian

Being aware of any changes in your animals’ appearance, eating habits, behavior, or manure will help you notice possible health issues that need to be addressed.

With any medication or dewormer, it is important to read all labels for dosage, administration method (oral, injectable, paste, or pour-on) and withdrawal period. *Withdrawal period* or *withdrawal time* refers to the period of time that must pass between the last treatment of a medication and the slaughter of meat animals or the collection of milk from a dairy animal. The withdrawal period allows the medication to be eliminated from the animals’ body so that the meat or milk does not contain unsafe residues for human consumption.  

Most medications are administered to an animal either orally, by injection, or topically (on the skin). It’s important to read the label to learn which method to use. Learning where, when, and how to properly give an injection is an important skill to learn whether you are giving vaccinations or treating an illness. There are three different types of injections: Subcutaneous “sub cu” (under the skin), intramuscular “IM” (in the muscle), or intravenously “IV” (in the vein). Subcutaneous injections should be given under the skin in front of the point of shoulder. Intramuscular injections should be given in the neck region because all IM injections cause tissue damage which lowers the value of the carcass of a meat animal.

See pp. 5.1-5.8, 12.7-12.16, *Beef Resource Handbook*, Ohio State University Extension, 2011,

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Suggested Beef Cattle Health Program
Level 1, 2, & 3

Market Steer
When purchasing an animal, members should ask the breeder/seller which vaccinations have been given and if any others are necessary. Listed below are suggestions for vaccinations that should be given to a steer:

- Vaccinate for Respiratory Complex with a product such as Titanium or Bovi Shield
- Vaccinate for Clostridial diseases with a product such as Vision 8

These vaccinations only need to be given once per year and are usually given to the steer before it is sold as a 4-H project. If your steer was not vaccinated by the breeder/seller, then it is best to vaccinate it soon after purchase.

In addition to the vaccinations, it’s important to control internal and external parasites with a broad spectrum dewormer such as Cydectin or Dectomax. Ask the breeder/seller if the steer has been treated for parasites.

If a steer has been vaccinated and dewormed before the member purchases it, the only suggested health care is to treat the animal with a dewormer during the spring of the year. Before giving any medication or dewormer to your animal, read and follow the dosage, administration, and withdrawal requirements on the medication or wormer. Members should always consult a veterinarian with any questions about vaccinations and other beef cattle health concerns.

Breeding Cattle
Breeding cattle projects require a more extensive health care program because the animals are kept for a longer time. Included on the next page is a suggested program for breeding cattle and calves. Members should consult a veterinarian with any questions regarding beef cattle health concerns and always follow label instruction on medications and dewormers.
Suggested Beef Cattle Herd Health Program

Birth
- Selenium injection - BoSe
- Dip naval stump – betadine or mild iodine
- Optional – nasalgen - Enforce

Branding time - 3 to 4 months of age
- Vaccinate for Respiratory complex including PMH – MLV – with a product such as Vista Once or (Pyramid 5 & Presponse HM) or Titanium 5
- Vaccinate for Clostridium – with a product such as Vision 8 somnus
- Administer a multi mineral or copper boluses
- Deworm

Preweaning – 2 to 3 weeks prior to weaning
- Vaccinate for Respiratory Complex and 5 serotypes of Leptospirosis – with a product such as MLV – Titanium 5 L5
- Vaccinate for Clostridium – with a product such as Vision 8
- Administer a multi mineral
- Deworm – with a pour on, paste, liquid or injectable product

Breeding Females – Yearling Heifers and Cows between Calving and Breeding
WARNING: Be sure that vaccinations are given at least 30 days prior to breeding
- Vaccinate for Respiratory Complex & 5 serotypes of Leptospirosis & Vibrio – with a product such as MLV – Vista 5 VL5 or Titanium 5 L5
- Vaccinate for Clostridium – with a product such as Vision 8
- Administer a multi mineral or copper boluses
- Deworm – with a pour on, paste, liquid or injectable product

Other Considerations for General Herd Health
- Mineral program – year round provide a mineral supplement; during breeding season use a chelated product such as Four Fertility
- Fly control - late spring or early summer – use fly tags or a pour on product
- At pregnancy check time – give a booster vaccine with killed respiratory complex – with a product such as Virashield 6 L5

Suggested Beef Cattle Health Program information courtesy of Dr. Randy Perry, Animal Science Department, California State University Fresno
BEEF CATTLE
BREEDING AND REPRODUCTION
Level 3

It is important to understand basic information about beef cattle breeding, reproduction, and management of a cow and calf:

- A heifer will come into heat (estrus) around eight months of age
- The heat period lasts from 14-20 hours
- The heat cycle repeats every 18-21 days until the heifer or cow is bred
- Selection of a bull to which to breed should be based on performance records of the bull and desired traits that you want in a calf
- Selection of a bull that is known to sire smaller calves at birth should be used to breed first-calf heifers
- Female cattle can be bred by natural service with a bull or by artificial insemination (A.I.)
- Gestation (pregnancy) for cattle is approximately 283 days
- Heifers and cows have special nutritional needs during gestation and lactation
- You should understand the signs and stages of calving and be prepared to help the female, particularly heifers, during calving
  - Dilation – the calf moves into the birth canal, contractions begin, the heifer or cow becomes restless and may try to go off by herself
  - Calving – the water bag will appear and break, the front feet of the calf should appear first, the heifer or cow will have hard, frequent contractions, she may lie down and stand up, paw the ground, and eventually push; the calf should be delivered within two hours after the water bag breaks; if this doesn’t happen, contact a veterinarian or an experienced cattle person for help.
  - Discharge of the afterbirth – the placenta is usually expelled immediately after the calf is born; if this doesn’t happen within 12 hours after the birth, contact your veterinarian.

- After calving, there are several steps that should be taken:
  - The heifer or cow will lick the calf to clean and stimulate it.
  - If the calf is having trouble breathing or getting up, clear the mucous from the mouth and nose and vigorously rub the calf with a dry towel.
  - The calf should get up and nurse within the first few hours after birth, but usually will nurse within 30-60 minutes.
o If the calf is weak and cannot nurse, it must be fed colostrum using a stomach tube. Contact a veterinarian or experienced cattle person for help.

o Dip the calf’s navel cord in 7% iodine to protect it from infection

o A selenium injection is recommended to prevent white muscle disease.

BEEF CATTLE
GROOMING, FITTING, & SHOWMANSHIP
SKILLS

Level 1
Member should be prepared to demonstrate knowledge of the following skills:
• Tie and untie steer correctly
• Lead steer into and out of blocking chute correctly
• Brush steer to work hair correctly
• Walk steer
• Set up legs
• Use of show stick
• Use of Scotch comb in show ring
• Where to stand in relation to the judge

Level 2
Member should be prepared to demonstrate knowledge of the following skills:
• All Level 1 skills
• Where to clip on a market steer
• Proper use of electric blower
• Setting up steer in profile pose
• Setting up steer when viewed from behind

Level 3
Member should be prepared to demonstrate knowledge of the following skills:
• All Level 1 & 2 skills
• Show Day Fitting

Resources:
https://www.youtube.com/results?search_query=beef+cattle+fitting
https://www.youtube.com/results?search_query=beef+cattle+showmanship
Completion of Market Animal Entry Form
Level 1

Members should be able to read The Big Fresno Fair Exhibitors’ Handbook and complete an entry for a market beef animal or breeding heifer. A copy of the handbook can be found at:

www.FresnoFair.com

All entries for the fair are done on-line but members should be familiar with what information is needed to enter a market steer or breeding heifer. Visit the following site for more information on completing an entry:

References

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http://extension.psu.edu/animals/camelids/nutrition/feed-analysis-its-all-about-energy


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http://extension.psu.edu/courses/beef/basic-production-practices

http://extension.psu.edu/courses/beef/selection-principles


http://www2.ca.uky.edu/agri/pd/a/mana/meatid/BEERFCUTS.asp

http://www.abc.cornell.edu/courses/as360/lecture/breeds.html

http://www.ansi.okstate.edu/breeds/cattle

http://www.apsc.vt.edu/facilities/beef/breeds/index.html

http://www.cattle.com/articles/title/Maine+Anjou+Cattle.aspx

http://www.cattle.com/articles/title/Simmental+Cattle.aspx

http://www.hereford.org

http://www.thecattlesite.com/breeds/beef/17/simmental/overview

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Madera County 4-H “Beef Study Guide – Livestock Expo”

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