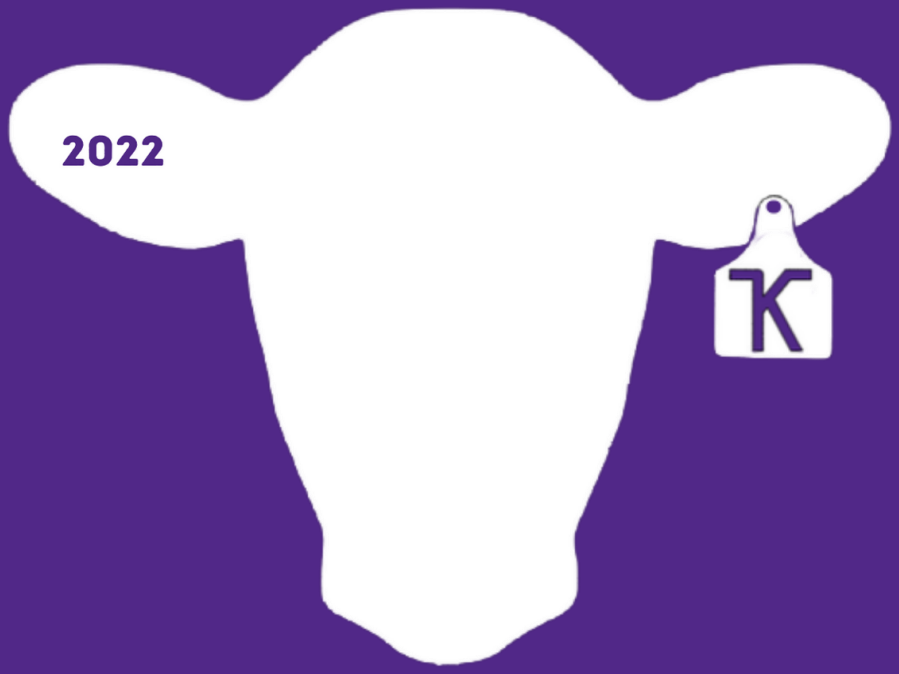
Educational Resource

KANSAS JUNIOR BEEF



PRODUCER DAY

K-STATE
Research and Extension

Youth Livestock Program · Kansas State University
214 Weber Hall · 1424 Claflin Road · Manhattan, KS 66506

Table of Contents

Contributions

Special thanks to these people and organizations for their contributions to the Junior Beef Producer Day program and this educational resource.

Animal ID, Inc.

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Dr. Bob Weaber

Dr. Bryan Weaver

K-State Livestock Judging Team

Youth for the Quality Care of Animals (YQCA)

Thank you to our sponsors!

Selection criteria for a youth heifer project

KSU Junior Beef Producer's Day

Chris Mullinix

March 5, 2022

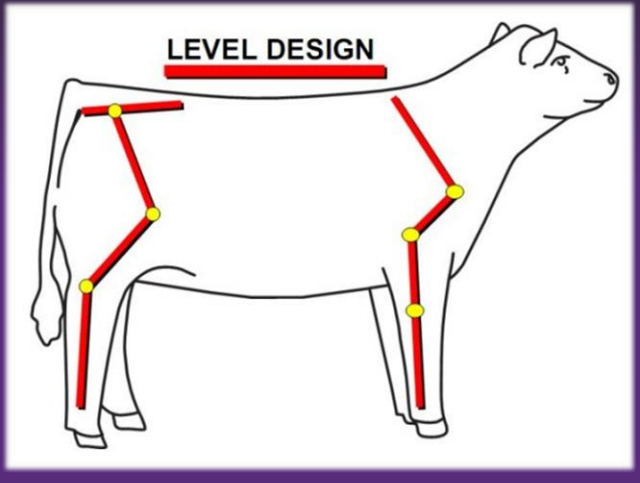
What is your goal?

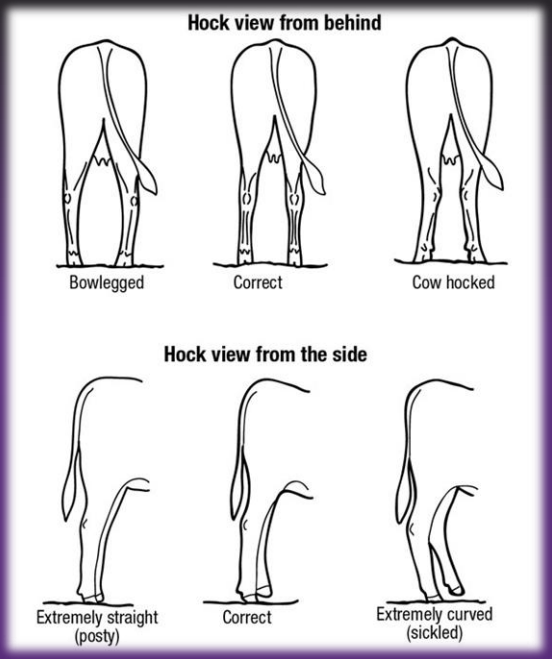
- **Will this project be remarketed at the conclusion of the show year?**
- **Do you want the potential to build a long-term breeding program?**
- **What is your resource availability?**
- **What do you hope to take from the project?**
- **At what level do you plan/hope to compete?**

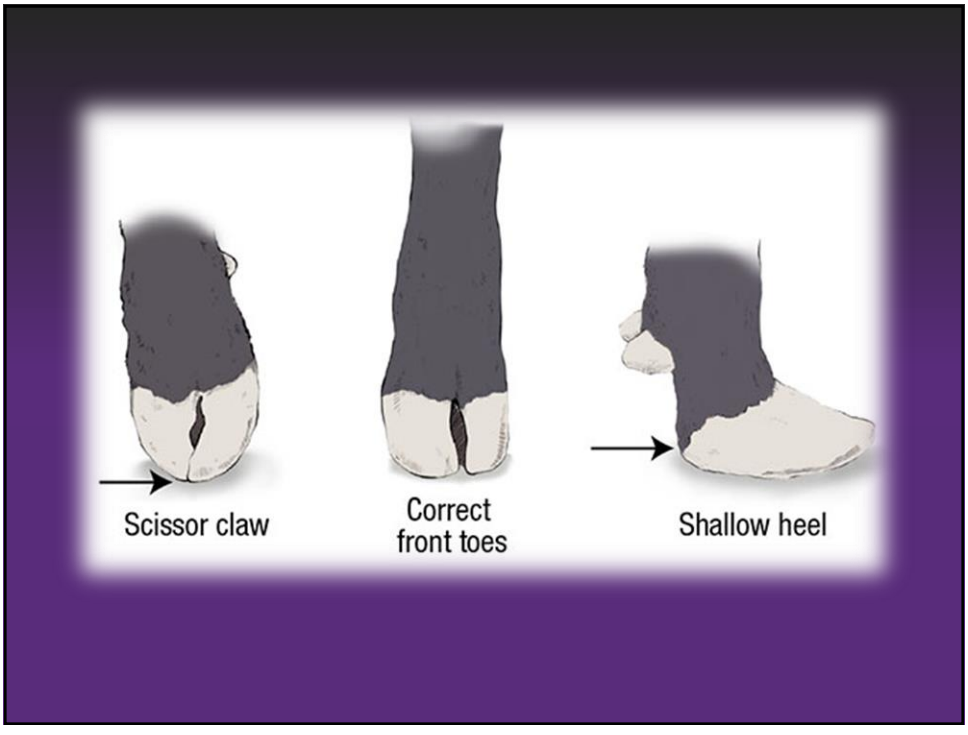
Phenotypic traits to evaluate in the selection of your heifer project

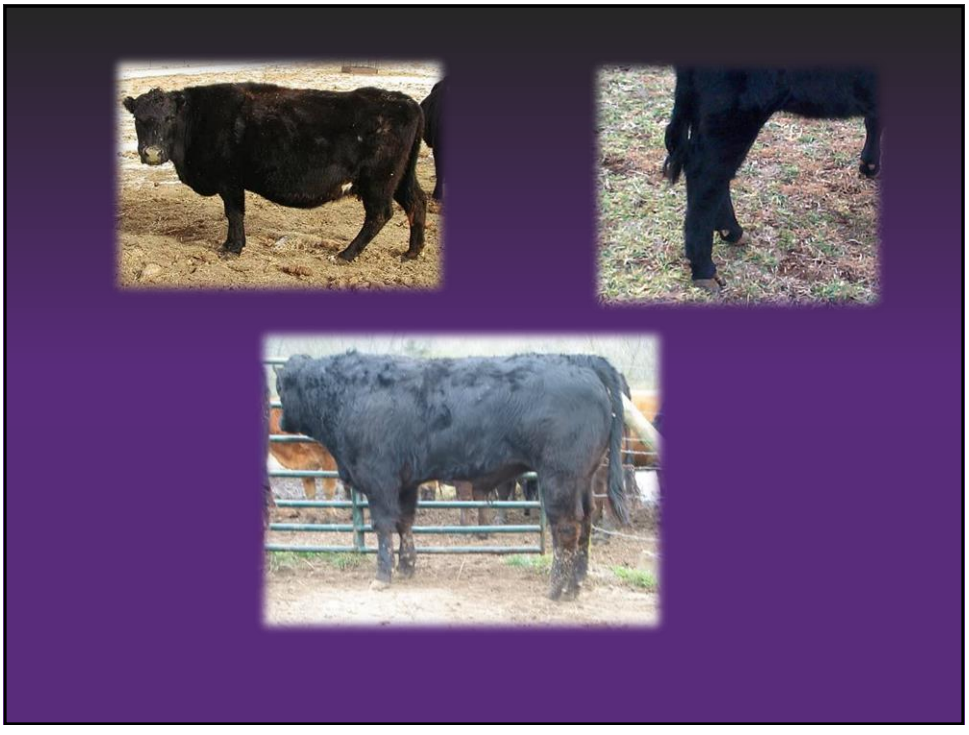
- **Structural Correctness**
- **Body Volume**
- **Balance**
- **Growth (often referred to as performance)**
- **Muscle**
- **Sex Character**
  - **– Heifers should be feminine in appearance**

Correctness of structure

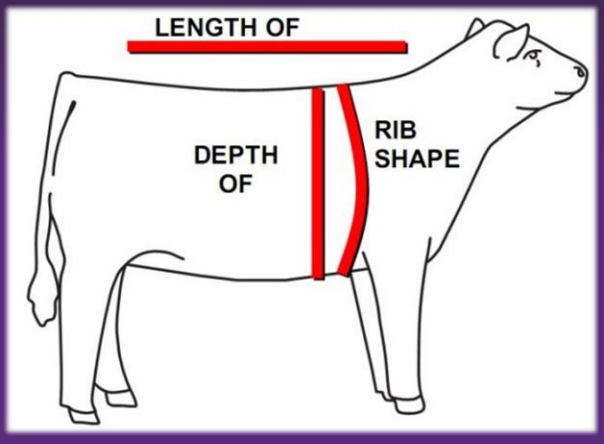



Hock view from behind
Bowlegged
Correct
Cow hocked
Hock view from the side
Extremely straight (posty)
Correct
Extremely curved (sickled)


Scissor claw
Correct front toes
Shallow heel



Body Volume



Balance

Female Character

Other factors to consider in the selection of your heifer project

- **Breed**
- **Age**
- **Pedigree Information**
- **Performance records/EPD's**
- ***Eventually your show heifer has to become a cow!***

Value in Today's Breakout Sessions

- **Understanding nutrition in a breeding female**
- **Getting your heifer into production in a timely manner**
- **Hair care, grooming and showmanship**
- **Building a herd from your heifer project**

Buyer Beware!

- *Selecting young cattle and predicting their outcome is very difficult*
- *Fundamentals first!*
- *Don't get wound up in the bells and whistles*
- *Online sales??*
  - *Convenient – Absolutely!*
  - *Don't forget the value in seeing an animal prior to purchase and the educational component associated with making that trip*

Any Questions?

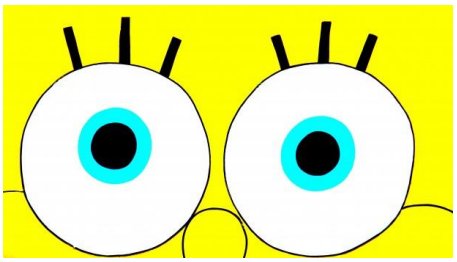
Go Cats!!

EMAW!!

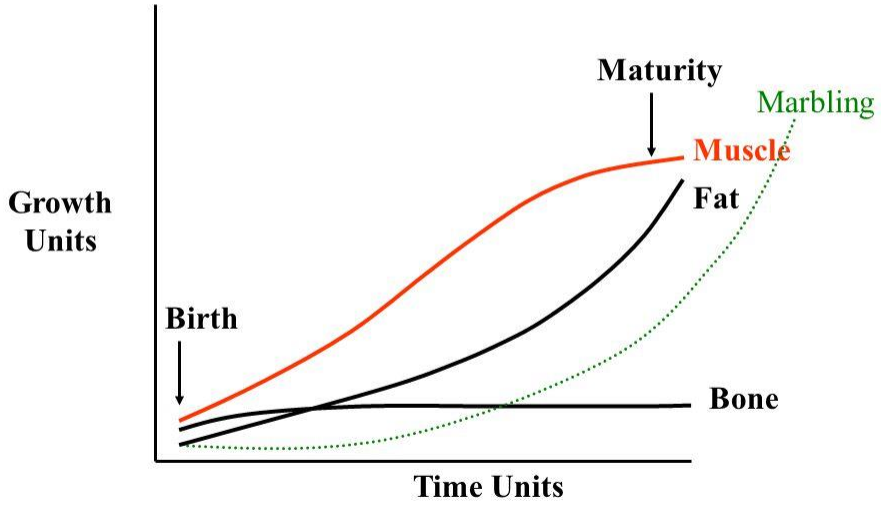
FEEDING SHOW CALF THE BASICS

Jaymelynn Farney, PhD
Beef Systems Specialist
Kansas State University

Tools essential for feeding show calf

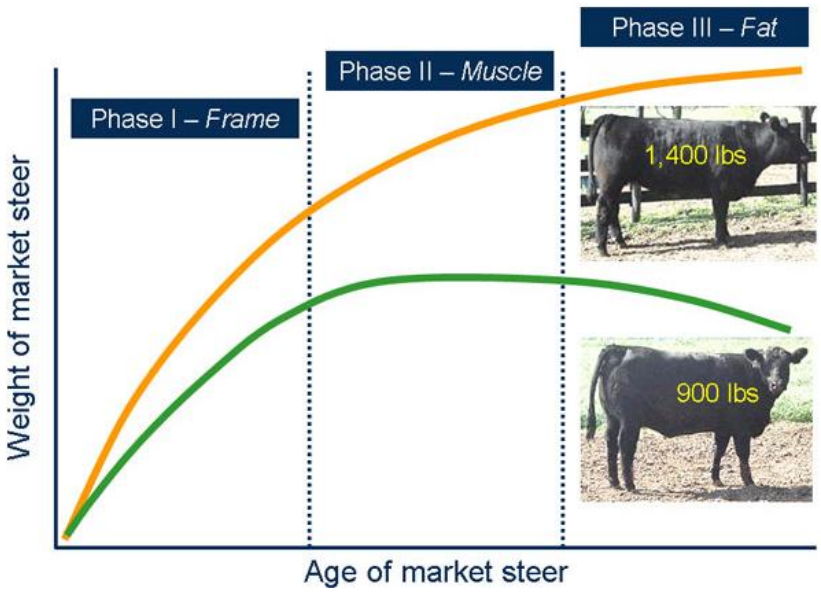


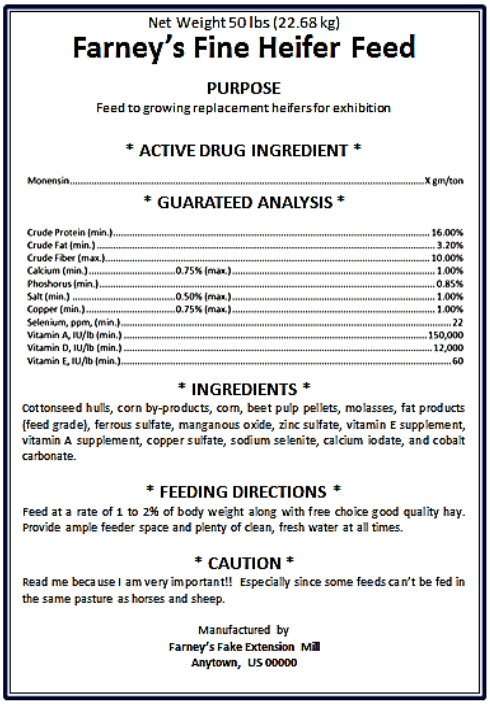
Normal Postnatal Growth Curves of Bone, Muscle, and Fat[a]



[a] Adapted from Boggs, et al, 1998

Growth Curves for Market Steers





Net Weight 50 lbs (22.68 kg)

Farney's Fine Heifer Feed

PURPOSE

Feed to growing replacement heifers for exhibition

*** ACTIVE DRUG INGREDIENT ***

Monensin ..... X gm/ton

*** GUARATEED ANALYSIS ***

Crude Protein (min.)	16.00%
Crude Fat (min.)	3.20%
Crude Fiber (max.)	10.00%
Calcium (min.)	0.75% (max.) 1.00%
Phoshorus (min.)	0.85%
Salt (min.)	0.50% (max.) 1.00%
Copper (min.)	0.75% (max.) 1.00%
Selenium, ppm, (min.)	22
Vitamin A, IU/lb (min.)	150,000
Vitamin D, IU/lb (min.)	12,000
Vitamin E, IU/lb (min.)	60

*** INGREDIENTS ***

Cottonseed hulls, corn by-products, corn, beet pulp pellets, molasses, fat products (feed grade), ferrous sulfate, manganous oxide, zinc sulfate, vitamin E supplement, vitamin A supplement, copper sulfate, sodium selenite, calcium iodate, and cobalt carbonate.

*** FEEDING DIRECTIONS ***

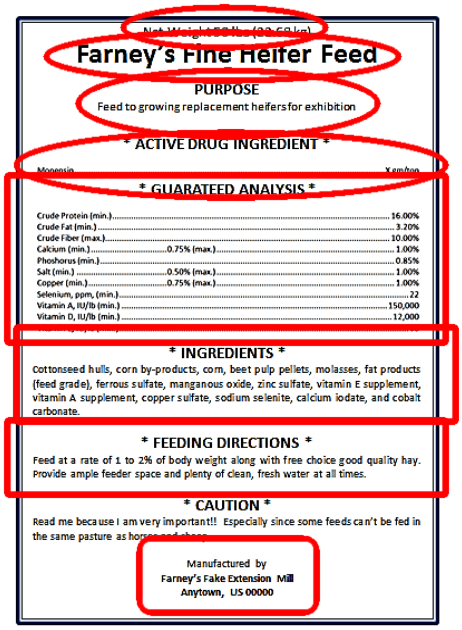
Feed at a rate of 1 to 2% of body weight along with free choice good quality hay. Provide ample feeder space and plenty of clean, fresh water at all times.

*** CAUTION ***

Read me because I am very important!! Especially since some feeds can't be fed in the same pasture as horses and sheep.

Manufactured by
Farney's Fake Extension Mill
Anytown, US 00000

- Weight of bag
- Product Name
- Purpose
- Drug if included, amount, directions
- Analysis
- Ingredient
- Feeding directions
- Manufacture name and address



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- Analysis
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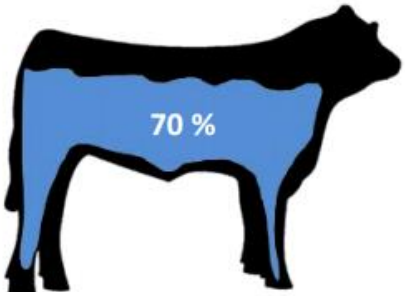
- What is missing from feed label that helps with cattle feeding???

Energy value

- Cattle have specific demands for calories a day to meet energy demands and for growth

Needs of animal

- Water
- Energy
  - Carbohydrates
  - Lipids (fats and oils)
- Protein
- Minerals
- Vitamins

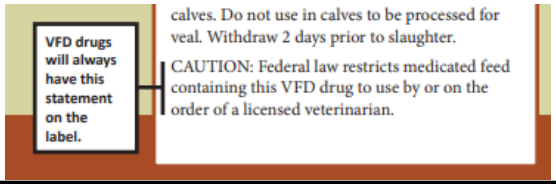


Antibiotics in starter feeds

ALWAYS ALWAYS ALWAYS
Follow label directions with antibiotics

- Decoquinate (Deccox – coccidiosis)
- Tetracycline (CTC – Auremoysin – respiratory)**
- Ionophores (coccidiosis, bloat)

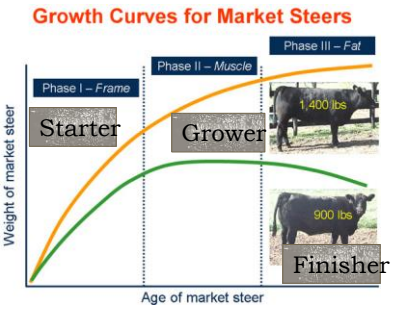
** must have a VFD.



Three stages of rations

- Starter
- Grower
- Finisher

https://shorterranch.com/winners/



http://www.ctnewsonline.com/news/article_eeb6a6ac-d5c3-11e9-ab2a-2395

Starter Phase

2 to 4 weeks

Starter ration

- 14% or greater crude protein
- > 20% crude fiber
- Low energy
  - Not a lot of corn
- Often contain antibiotics

- Newly weaned calves
- Calves that have never consumed concentrate

- 2 to 4 weeks to feed

Photos are for illustration purposes only and not a promotion of any specific product

Starting cattle on feed

- Few methods:
- Safest –
  - Free-choice grass hay
  - 0.5% of body weight as concentrate
  - Increase concentrate 0.5% of body weight every 7-10 days until starter is maxed out at 1.5% of body weight
- Cleanest –
  - Total daily intake needs to be 3% of body weight
  - 0.5% of body weight as concentrate
  - 2.5% of body weight as grass hay

Starting cattle on feed

- Few methods:
- Grower starting –
  - Free-choice grass hay
  - 0.5% of body weight as concentrate
  - Increase concentrate 0.5% of body weight every 7-10 days until starter is maxed out at 1.5% of body weight

ONLY RECOMMEND if knowing that the calf has been eating concentrates

Grower Phase

3 to 5 weeks after starting on feed

Grower ration

Photos are for illustration purposes only and not a promotion of any specific product

- 500 to 1,000 pound calves
- >12% crude protein
- Moderate energy
- Moderate fiber (15-20% crude fiber)
- 2 to 3 pounds ADG

- Ideal ration for heifers if fed at 1 to 1.5% of body weight

Transitioning to grower ration

- First week replace 25% of starter ration with grower ration every 3 to 5 days (or could stay on your week by week)
  - Within a month are completely on grower ration
  - Calves are gaining weight – should be at least 2 lbs/day so every week need to increase concentrate feed by 0.5 pounds per day

After finishing transition period

After week 5 on grower, bump concentrate up 0.5 pounds every 7 to 10 days until 800 to 1,000 pounds. And on average 0.1 lb of hay per week

- 800 pounds start finisher for large framed, later maturing cattle to make sure you get enough finish by show day
- 1,000 pound to start finisher for small framed, early maturing cattle

Finishing Phase

800 to 1,000 pounds start

Finishing ration

- < 12% crude protein
- Crude fiber 12-15%
- High energy
  - > 50% corn
- Feed 70 to 120 days before final endpoint

- When to start feeding finishing ration
  - Small frame, early maturing – 1,000 pounds
  - Large frame, late maturing – 800 pounds

Finishing ration

- Two changes occurring
  - Increasing grain and decreasing hay
    - Max 2.5% body weight concentrate
    - 0.5% body weight hay
  - Transition from grower to finisher
    - 25% change each week

- If cattle getting too fat, add more grower
- If not getting fat enough, add liquid fat – not corn

Feeding plan based on % body weight

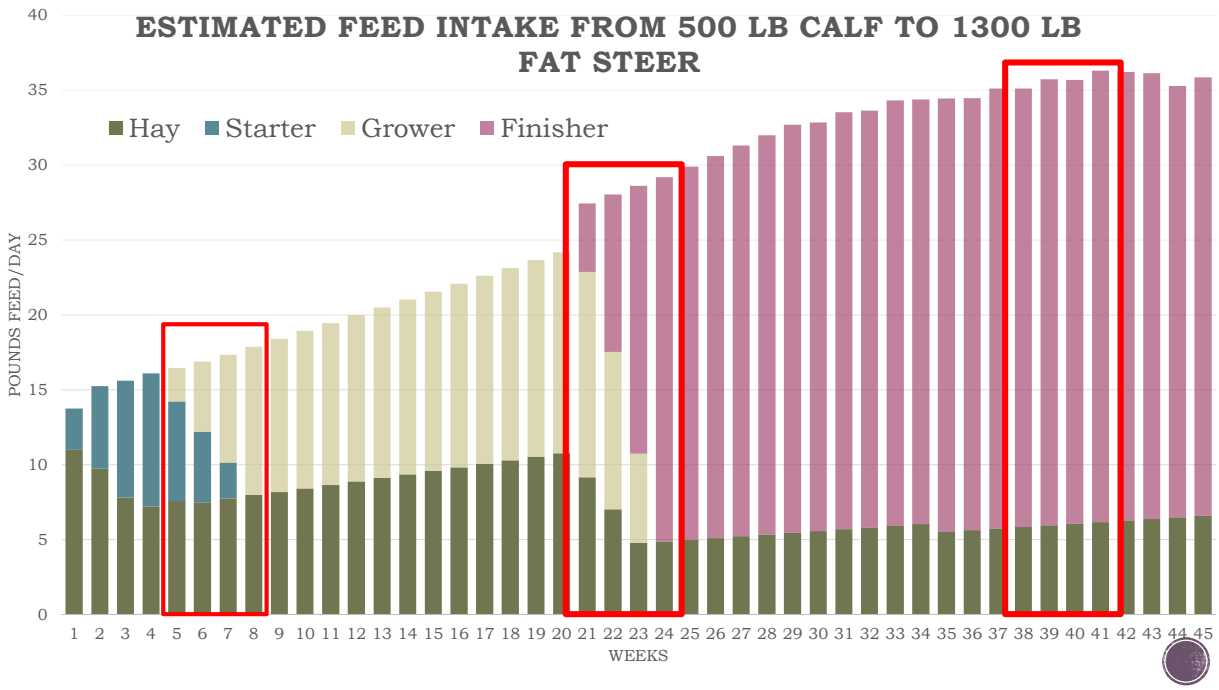
	Week	Starter	Hay	Grower	Finisher
Starter	1	0.5%	2.5%		
Starter	2	1%	2%		
Starter	3	1.5%	1.5%		
Starter	4	1.5%	1.5%		
Grower	5	1.125%	1.5%	0.375%	
Grower	6	0.75%	1.5%	0.75%	
Grower	7	0.375%	1.5%	1.125%	
Grower	8-20		1.5%	1.5%	
Finisher	21		1%	1.5%	0.5%
Finisher	22		0.75%	1.125%	1.125%
Finisher	23		0.5%	0.625%	1.875%
Finisher	24-done		0.5%		2.5%

Finishing ration

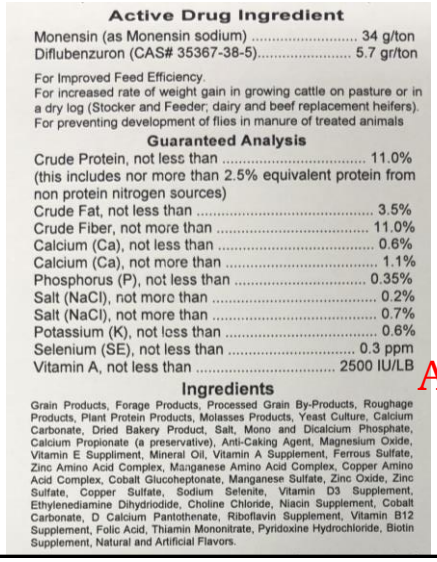
Beginning on week F5 calves will continue to gain weight, and we are keeping finisher concentrate at 2.5% of body weight – that equals about 0.6 lbs additional concentrate each week for an ADG of 3.0 lbs/d. Hay will also go up 0.1 lbs each week.

Often between 1100-1200 lbs total intake will reduce.
Want to keep at least 5 lbs hay/d.

Daily look at amount of grain left.
If none, for 2 days in row, increase grain by 0.5 lbs
If over 5 lbs grain left 2 days in row decrease 0.5 lbs



Which feed?



Active Drug Ingredient

Monensin (as Monensin sodium) ..... 34 g/ton
Diflubenzuron (CAS# 35367-38-5)..... 5.7 gr/ton

For Improved Feed Efficiency.
For increased rate of weight gain in growing cattle on pasture or in a dry log (Stocker and Feeder; dairy and beef replacement heifers).
For preventing development of flies in manure of treated animals

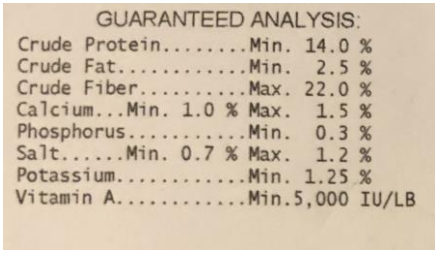
Guaranteed Analysis

Crude Protein, not less than 11.0%
(this includes nor more than 2.5% equivalent protein from non protein nitrogen sources)
Crude Fat, not less than 3.5%
Crude Fiber, not more than 11.0%
Calcium (Ca), not less than 0.6%
Calcium (Ca), not more than 1.1%
Phosphorus (P), not less than 0.35%
Salt (NaCl), not more than 0.2%
Salt (NaCl), not more than 0.7%
Potassium (K), not less than 0.6%
Selenium (SE), not less than ..... 0.3 ppm
Vitamin A, not less than ..... 2500 IU/LB

Ingredients

Grain Products, Forage Products, Processed Grain By-Products, Roughage Products, Plant Protein Products, Molasses Products, Yeast Culture, Calcium Carbonate, Dried Bakery Product, Salt, Mono and Dicalcium Phosphate, Calcium Propionate (a preservative), Anti-Caking Agent, Magnesium Oxide, Vitamin E Suppliment, Mineral Oil, Vitamin A Supplement, Ferrous Sulfate, Zinc Amino Acid Complex, Manganese Amino Acid Complex, Copper Amino Acid Complex, Cobalt Glucoheptonate, Manganese Sulfate, Zinc Oxide, Zinc Sulfate, Copper Sulfate, Sodium Selenite, Vitamin D3 Supplement, Ethylenediamine Dihydriodide, Choline Chloride, Niacin Supplement, Cobalt Carbonate, D Calcium Pantothenate, Riboflavin Supplement, Vitamin B12 Supplement, Folic Acid, Thiamin Mononitrate, Pyridoxine Hydrochloride, Biotin Supplement, Natural and Artificial Flavors.

A



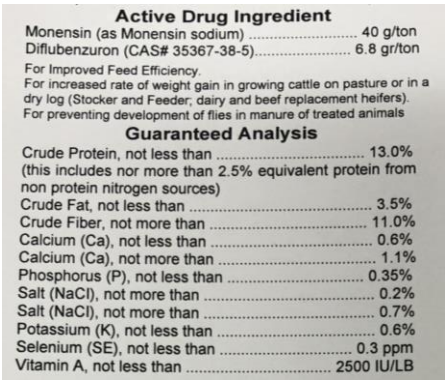
GUARANTEED ANALYSIS:

Crude Protein.....Min. 14.0 %
Crude Fat.....Min. 2.5 %
Crude Fiber.....Max. 22.0 %
Calcium...Min. 1.0 % Max. 1.5 %
Phosphorus.....Min. 0.3 %
Salt.....Min. 0.7 % Max. 1.2 %
Potassium.....Min. 1.25 %
Vitamin A.....Min.5,000 IU/LB

B

Starting calf of feed – calf has never eaten concentrate

Which feed??



Active Drug Ingredient

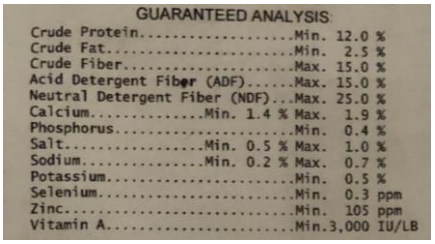
Monensin (as Monensin sodium) ..... 40 g/ton
Diflubenzuron (CAS# 35367-38-5)..... 6.8 gr/ton

For Improved Feed Efficiency.
For increased rate of weight gain in growing cattle on pasture or in a dry log (Stocker and Feeder; dairy and beef replacement heifers).
For preventing development of flies in manure of treated animals

Guaranteed Analysis

Crude Protein, not less than 13.0%
(this includes nor more than 2.5% equivalent protein from non protein nitrogen sources)
Crude Fat, not less than 3.5%
Crude Fiber, not more than 11.0%
Calcium (Ca), not less than 0.6%
Calcium (Ca), not more than 1.1%
Phosphorus (P), not less than 0.35%
Salt (NaCl), not more than 0.2%
Salt (NaCl), not more than 0.7%
Potassium (K), not less than 0.6%
Selenium (SE), not less than ..... 0.3 ppm
Vitamin A, not less than ..... 2500 IU/LB

A



GUARANTEED ANALYSIS:

Crude Protein.....Min. 12.0 %
Crude Fat.....Min. 2.5 %
Crude Fiber.....Max. 15.0 %
Acid Detergent Fiber (ADF).....Max. 15.0 %
Neutral Detergent Fiber (NDF)...Max. 25.0 %
Calcium.....Min. 1.4 % Max. 1.9 %
Phosphorus.....Min. 0.4 %
Salt.....Min. 0.5 % Max. 1.0 %
Sodium.....Min. 0.2 % Max. 0.7 %
Potassium.....Min. 0.5 %
Selenium.....Min. 0.3 ppm
Zinc.....Min. 105 ppm
Vitamin A.....Min.3,000 IU/LB

B

Grower ration for calf you know has been on feed for a little while

Which Feed??

A

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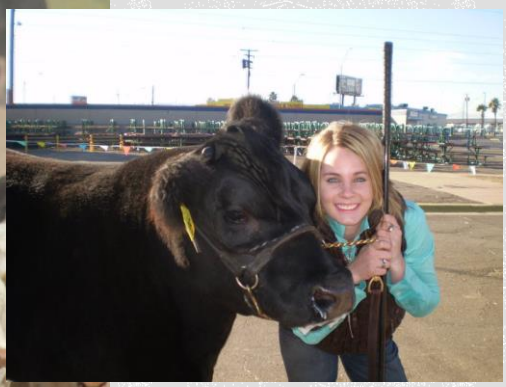
GUARANTEED ANALYSIS:

Crude Protein.....Min. 12.0 %
Crude Fat.....Min. 3.5 %
Crude Fiber.....Max. 15.0 %
Calcium...Min. 0.65 % Max. 0.9 %
Phosphorus.....Min. 0.28 %
Salt.....Min. 0.5 % Max. 1.0 %
Potassium.....Min. 0.6 %
Vitamin A.....Min.2,000 IU/LB

Finishing ration

620-820-6125
jkj@ksu.edu

Jaymelynn Farney



What is Nutrition and How to Feed Show Project
Jaymelynn Farney, Beef Systems Specialist, Kansas State University

Nutrition is one of the most important components of a successful 4H beef project. **Nutrition** is the process in which animals consume, digest, absorb, and use food for maintenance, growth, fetal development or milk production. **Nutrients** are the components of feeds that have specific functions within the animal to meet important metabolic processes. Nutrients include energy sources (sugar, starch, cellulose, fat), protein, minerals, vitamins, and water. Feeding costs are a large, but necessary expense in managing beef cattle, so understanding how cattle gain and the nutrients they require will make the most "bang for your buck" so to speak.

Nutrient requirements for varying levels of performance have been researched for years and the requirements are published by the National Research Council. These recommendations have been determined to be accurate for groups of cattle, but for your individual animal, if you are not happy with performance then consider making minute changes to protein, minerals, and vitamin levels. Cattle require nutrients in actual amount (weight) so some math will need to be used to determine if a commercial feed and/or your hay supplement are providing enough of the individual nutrients. When determining the actual amount of nutrients offered in feed an estimate of dry matter needs to be determined. The nutrients are located in the dry part of the feed and are called dry matter (DM). Dry matter is determined by taking a sample of the feed and drying it until there is zero moisture remaining. In general most dry feeds contain 7 to 13 percent moisture while molasses is 25% water. You can also gather exact dry matter by sending your feed to a testing laboratory or with the permission of your parents, placing a sample in an oven or microwave. Before trying to determine the dry content of your feed at home, research specific methods to determine dry matter content, and then follow directions.

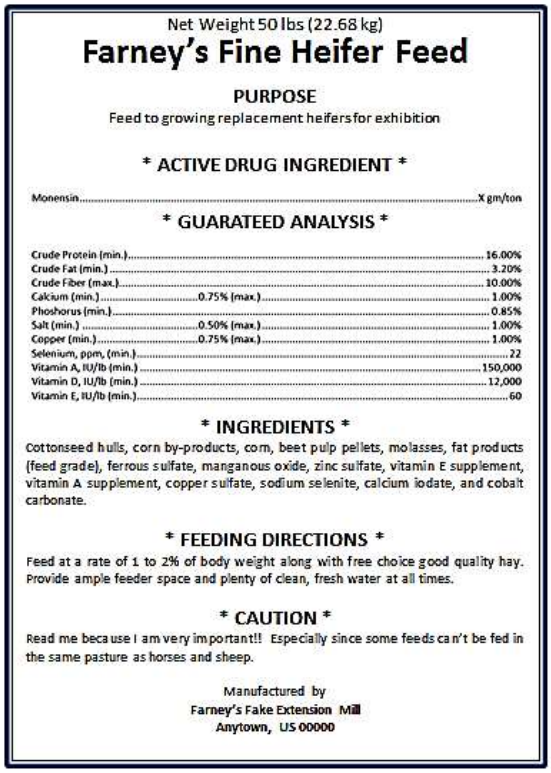
Energy is very important for growth and fat deposition for all cattle. Energy is reported as total digestable nutrients (TDN) or net energy (NE). Net energy is further broken down into net energy for maintenance (NEm) or net energy for gain (NEg). As the names indicate NEm tells you how many calories (energy) needs to be supplied for maintenance (no change in weight or body fat), while NEg indicates the calories that will be used for putting on weight and body fat. Unfortunately, when reading the commercial labels for most feeds, they do not provide values for energy, but if you are concerned about this value, take a sample of your feed and submit to a laboratory for feed analysis. This will provide energy values for your feed and can help with determining how much to offer to your cattle to meet your goals. Energy from feed ingredients is often split into two categories: concentrate and roughage. Concentrate is typically very high energy grains with starch while roughage is typically hays or "hulls".

Protein is measured as crude protein (CP). It is expressed as a percentage and for all commercial rations will be listed in the nutrient profile. Protein is required to aid in rumen microbial digestion, maintenance of feed intake and lean growth. Protein sources vary in location of digestion within the animal and understanding the basics about protein digestion will help provide the requirements for successful growth and "look" for your show animal. Protein sources offered to cattle will first have to feed the rumen microbes. Feed protein that is digested by the rumen microbes is called rumen degradable protein (RDP). Once the rumen microbes digest the protein they generate microbial crude protein (MCP) in the rumen that then gets passed through the rest of the stomachs to the small intestine where it is finally used by the animal as a protein source. Microbial crude protein, if the rumen environment is balanced, is an ideal protein source for the ruminant. This is the reason why in ruminant nutrition we say "Feed the rumen microbes first". Another form of protein is by-pass protein or rumen undegradable protein (RUP). This protein passes through the rumen without digestion by the microbes and then can be used by the animal in the small intestine. Small amounts of by-pass protein have been shown to help with cattle performance. However, it is MOST important that nearly 80% of the protein offered to the animal is rumen degradable. In general, protein from grains, fresh grasses, and hays are primarily rumen degradable, while by-product feeds are about 50% by-pass protein. Non-protein nitrogen (NPN) is essentially 100% rumen degradable if adequate energy is supplied in the diet.

From a mineral perspective, there are two broad classes of minerals; macrominerals which are fed at higher levels and micromineral which are fed at lower levels. Calcium, phosphorus, salt, and magnesium are very important macrominerals that need to be included and balanced in the diet. Important microminerals include selenium, zinc, copper, and manganese. These are important for the "healthy look" of the cattle, for reproduction in heifers, and immune health. Amounts of these minerals will be listed on the feed tag.

Vitamins are also important for health, growth, and "bloom". Vitamins A and E are two that must be fed to cattle. Vitamin D is synthesized by sunlight exposure and does not need to be fed. However, if your cattle do not see sunlight daily, feeding a minimum of 125 IU/pound of feed is required. Vitamin B and C are synthesized in the rumen and do not need to be fed to cattle. The exception, is cattle that have rumen issues like bloat or acidosis, some Vitamin B will be beneficial until rumen is healthy again.

Figure 1: Example of a feed label. CAUTION…this is completely made up and by no means is an actual label or recommendation to feed to any cattle!



Net Weight 50 lbs (22.68 kg)

Farney's Fine Heifer Feed

PURPOSE

Feed to growing replacement heifers for exhibition

*** ACTIVE DRUG INGREDIENT ***

Monensin ..... X gm/ton

*** GUARATEED ANALYSIS ***

Crude Protein (min.)	16.00%
Crude Fat (min.)	3.20%
Crude Fiber (max.)	10.00%
Calcium (min.)	0.75% (max.) 1.00%
Phoshorus (min.)	0.85%
Salt (min.)	0.50% (max.) 1.00%
Copper (min.)	0.75% (max.) 1.00%
Selenium, ppm, (min.)	22
Vitamin A, IU/lb (min.)	150,000
Vitamin D, IU/lb (min.)	12,000
Vitamin E, IU/lb (min.)	60

*** INGREDIENTS ***

Cottonseed hulls, corn by-products, corn, beet pulp pellets, molasses, fat products (feed grade), ferrous sulfate, manganous oxide, zinc sulfate, vitamin E supplement, vitamin A supplement, copper sulfate, sodium selenite, calcium iodate, and cobalt carbonate.

*** FEEDING DIRECTIONS ***

Feed at a rate of 1 to 2% of body weight along with free choice good quality hay. Provide ample feeder space and plenty of clean, fresh water at all times.

*** CAUTION ***

Read me because I am very important!! Especially since some feeds can't be fed in the same pasture as horses and sheep.

Manufactured by
Farney's Fake Extension Mill
Anytown, US 00000

Understanding Feed Label

Since it is important to make sure nutrient requirements are met, reading and understanding a feed label becomes a must for feeding success. Some basics to help with understanding your feed label include understanding that the values reported on the label are described as "as-is". Within the feed label the amounts of important nutrients will be listed. For example, crude protein is listed as a percentage, whereas zinc is listed as parts per million (ppm). This becomes important so that you can accurately calculate the appropriate protein and minerals to offer your cattle. Antibiotics and ionophores are also listed on your feed label along with proper feeding directions associated with these ingredients. The final component of the feed label includes the list of ingredients. These are reported as the ingredient with the highest inclusion amount to the lowest. This in turn tells you predominantly what ingredient is being offered to you cattle. An example of a feed label is shown in figure 1.

Feed Ingredients

Grains – These feed ingredients are high in energy and will fatten cattle. The most common grain included in cattle diets is corn. Processing of corn increases the digestibility and the most common processed corn fed to ruminants is cracked, rolled, and steam flaked. Processing of the grain allows the rumen microbes greater access to the starch for microbial digestion. In a finishing ration, corn can be included between 42 to 58% of the total ration. Whole shelled corn can be fed to calves weighing up to 450 pounds because they can digest this grain efficiently but at heavier weights, processing will result in greater average daily gains.

Sorghum grain provides energy, but must be processed prior to feeding since the external seed coating is restrictive for the rumen microbes. Properly processed grain sorghum can replace corn, pound-for-pound in the ration.

Oats are another excellent grain source for steers and heifers. Oats offer energy and fiber therefore providing a dual purpose feed source. One issue with oats is the cost for the grain sometimes makes feeding of oats cost prohibitive. If you would like to include some oats in ration, but cost is

prohibitive, try this lower cost mixture to replace the oats within a ration (on a pound for pound basis): 70-75% corn, 15-20% cottonseed hulls, and 10-15% cottonseed meal.

Barley and wheat are other grain options to feed to cattle. Barley can be used to replace up to 50% of the corn or sorghum in the ration. Barley is often included because of perception of improving handle on finished cattle. However, water consumption and thus moisture content of tissues plays a larger role in handle than feeding of barley. Wheat is a very high energy feed but is difficult to feed because of the potential for acidosis and bloat. Barley also is a high risk bloating grain when fed at high levels of the diet.

Protein Supplements - Common protein supplements fed to cattle include many grain by-product feeds. Typically a by-product feed has had the energy components removed for other industrial uses and what is left over is high protein, high fiber feeds that make great supplements for cattle. Examples of high protein feeds include soybean meal, cottonseed meal, linseed meal, distillers grains, corn gluten meal, and brewers grains. Other high protein feeds that can be included in cattle diets are fish meal and non-protein nitrogen. Non-protein nitrogen sources such as urea and biuret are very cheap feed ingredients and work well with corn rations to meet cattle protein requirements and are used quite extensively in large commercial cattle feeding operations. However, "natural" or plant protein sources (aka not non-protein nitrogen) are a better feeding option for show cattle because they tend to provide extra bloom. Additionally, feeding urea to cattle weighing less than 600 pounds is not advisable because they cannot use this source of protein to meet requirements.

Younger cattle require higher levels of protein than older heavier cattle, as illustrated in table 1. Additionally, for greater lean muscle gains higher protein is required. All feed labels will provide a crude protein value of the feed. Crude protein is expressed as a percentage, so to determine if you are supplying enough protein to your animal you need to multiply the amount of feed by the percentage crude protein to determine how many pounds of crude protein you are providing your animal. If it matches the required amount in Table 1 then your ration is sufficient. Here is an example of how to calculate the amount of protein fed from a complete feed that is 12% crude protein with the steer eating 15 pounds and the dry matter of the feed is 96%.

$$15 \text{ lbs feed} \times (96/100) \times (12/100) = 1.73 \text{ lbs of protein on a DM basis}$$

Roughages - Cattle are designed to be able to convert fiber from grass to a product that people can use – meat…therefore all cattle diets need to include a source of roughage (fiber). Common sources of roughages include cottonseed hulls, hays, peanut and rice hulls. In younger cattle, when starting on concentrate diets, a higher roughage feed needs to be included so that chances of acidosis and bloat are reduced. When feeding your cattle, you do not want to cause digestive upsets because in most instances, a steer or heifer who bloats early in life will continually bloat and have reduced performance.

Acidosis is when too much starch is offered to the rumen microbes and it causes them to produce an acid that can cause damage to the rumen and potentially founder. Bloat is when too much gas is produced in the rumen and cannot escape. This is easy to see on the animal because the left side of their body will be expanded. Acidosis is hard to diagnose visually, unless the animal is really sick. Often times it can be manifested as diarrhea and the animal going off-feed. If bloat or acidosis occurs, then take the concentrate feed (corn or complete ration) out of the diet and place the animal on hay for a few days, then gradually start adding back the grain component. Properly stepping-up your steer or heifer to consuming concentrate will minimize the chance of acidosis and bloat. A typical method includes starting the steer or heifer with two to three pounds of grain with free choice hay for a couple of days, then increase the amount of grain (commercial feed) by 1.5-2.5 pounds every 7 to 10 days (for more details go to *Starting Cattle on Feed* section below). We still need at least 3-4 pounds of hay a day for rumen health, even while in a finishing diet.

For a starting/growing ration crude fiber needs 20-25% while a finishing ration needs to have about 12-16% fiber. Even in large commercial feeding operations there is at least 5% of the animals total diet that is a roughage/hay source. For younger animals a higher quality hay is recommended since such

a large percentage of their diet is hay. Examples of high quality hay can include prairie, Bermuda, brome, and alfalfa. Alfalfa is the highest quality hay of that list, however, it is often not recommended to feed alfalfa to your show animals because it can very easily cause bloat. Dehydrated alfalfa pellets, on the other hand have a much lower chance of causing bloat issues and that is why they are often included in commercial mixes along with cottonseed hulls to meet the fiber requirements. If you are wanting to feed alfalfa to your calves then you need to blend it with some other grass hay and feed 2 pounds of alfalfa and 2-3 pounds of grass hay.

Additives – Special "ingredients" are not necessary to successfully feeding your show animal as long as requirements are met, however there are some feed additives that are useful to help with health, palatability, and conditioning of the feed and hair coat.

Medicated feeds are available if you have issues with coccidosis or respiratory issues. Beginning January 2017, if feeding medicated feeds to your cattle, you must work with a veterinarian to get a valid veterinary feed directive (VFD) to be able to feed certain products.

All cattle feeds should include an ionophore. Ionophores not only help with feed efficiency, but help with minimizing coccidiosis and bloat. There are several quality ionophores on the market and all work well for feed efficiency. Sometimes ionophores can cause a reduction in daily feed consumption, but the cattle performance should not be impacted. If intake is restricted enough adding some feed conditioners to help with palatability can help. Examples of feed conditioners that increase palatability and reduce dust issues include molasses, fat, and oil. Some fats and oils can also increase the shine to the hair coat of your show animal, as long as there is less than 4% fat in the total ration. If there is more than 4% fat then intake is reduced.

In instances when digestive upset occurs, sometimes products like yeasts, direct-fed microbials, buffers, and enzymes can be used, but overall, if cattle are well-fed and well-managed the need for these potentially expensive additives are not needed, especially on a daily basis.

Feeding your calf

Gains and feed intake. Weight gain and fat thickness are the two primary points of concern with feeding your market steer. Knowing what your steer weighs at several times through the season will help you determine diets that need to offered. Based on your calf's weight, days to show, and final weight, you can determine the appropriate average daily gain to meet your objectives. You should have two sets of average daily gain goals; one for the steers growing ration and one for the finishing ration. Typically, the finishing ration will be fed for 4-5 months prior to show (or start when cattle weigh 800 to 1,000 pounds). This finishing period, may be longer if you are trying to get cattle finished in the middle of summer. Cattle do not consume as much feed during the summer months and their conversion into muscle and fat is severely stunted. Later maturing, larger framed cattle need to be on finishing ration longer than early maturing calves, to ensure they reach correct amount of finish.

The equations below show how to calculate the appropriate gains your animal needs. From there you can use Table 1 to determine the amount of energy and protein to meet that average daily gain goal.

Steer weighs 600 pounds at purchase 9 months from show date. The plan is to grow the steer to 950 pounds on the growing ration in 120 days. The average daily gain needs to be 2.08 lbs/d.

(950 lbs final weight – 600 lbs beginning weight) ÷ 120 days = 2.91 lbs/d

Finishing ration will start when steer weighs 850 pounds and you want show weight at 1350 lbs in 150 days. The average daily gain needs to be 3 lbs/d

(1350 lbs final weight – 950 lbs beginning weight) ÷ 150 days = 2.67 lbs/d

Feed intake is important is one of the primary drivers to develop feeding strategies. Most cattle consume between 2 and 3 percent of their body weight in dry matter daily. As a percentage of body weight, intakes decrease with age, weight, and condition (fat on animal). For example, a 600-pound steer will consume between 2.5 and 3% of its body weight (15 to 18 pounds) while a 1,300-pound steer will consume 2 to 2.25% of body weight (26 to 29.25 pounds).

Diet types. There are three main diets to feed your steer, and really only two for heifers.

The "starter" is a diet that is low in energy, high in roughage and fiber, and has the highest protein of the feeds you will offer to your cattle. Often times starter rations will contain antibiotics. Starters are important for newly weaned calves and are fed for 2 to 4 weeks, depending on previous care of the calf. Most of the medicated calf starters are restricted to use for 2 weeks because the antibiotic can not be fed longer. Read the feed label to determine antibiotic feeding requirements.

Ideally, all cattle will be placed on a starter ration first, before being transitioned to the "grower" ration. However, if you have purchased a calf that has already been consuming a mixed ration, you may start them on a grower. A grower is a diet for cattle in the growing stage, roughly 500 to 900 pounds. A grower should contain at least 12% crude protein, moderate fiber (15-20% crude fiber) and moderate energy. The moderate energy is important as we want calves to put on frame and muscle during the growing period, not as much fat. Fat will be deposited primarily in the finishing diet. If supplying too much energy and making calves too fat at a lighter weight, you have stunted their growth and will prevent them from reaching ideal market weight (~1,300 to 1,350 pounds) at an acceptable backfat thickness (~0.5 inches).

The grower diet is the most important diet for show heifers. You will not need to offer your show heifer a finishing diet or they will get too fat. Feeding a grower ration to you heifers at 1 to 2% of body weight with 1 to 2% of body weight as grass hay is the best way to grow your replacement heifer.

"Finishing" diet is the last phase of feeding. These are high in energy, lowest in protein (Crude protein <12%), and lowest in fiber (12-16% crude fiber). A finishing diet will consist of at least 50% corn. If you find that your calf is not gaining enough weight, or is not getting fat enough, increasing energy of finishing ration is important. This should be done by adding liquid fat, not more corn. If you offer too much corn, especially too rapidly, then you will have bloat, acidosis, and founder issues. Make sure though, that you are not feeding more than 4% total dietary fat to the animal as this can kill rumen microbes and lead to reduced performance and gut issues.

Starting cattle on feed and diet transitions. The safest way to start cattle on feed is to offer a good-quality grass hay (prairie, brome, fescue) free-choice and feed 0.5% of animals weight as a concentrate feed. If that concentrate feed is corn, for a 600-pound calf, start by feeding 3 pounds of corn. If a commercial "starter" is being fed, if crude fiber is >20%, first read label feeding directions. If there are no guidelines about introducing diet to cattle, start with free-choice grass hay and 0.5% of body weight as feed. Every 7 to 10 days increase concentrate/commercial feed by 0.5% of body weight. Remember, your calf should be gaining weight over this time frame. Hopefully the calf is gaining ~1.5 lbs/d, therefore you need to now be feeding a total of 1% of body weight as commercial feed/concentrate for a 610-pound steer (1.5 lb/d average daily gain x 7 days + 600-pound starting weight). After a week on feed you need to be feeding 6 pounds of concentrate/commercial feed and 12.3 pounds of grass hay. By the third week on feed, "starter" should be fed at 1.5% of body weight with either free-choice hay or hay fed to total entire feed offering to 3% of body weight. Continuing in my example, that 600-pound steer you started on feed should be weighing ~631-pounds, three weeks after starting to feed calf and now you should be feeding 9.5 pounds per day of commercial feed and free-choice hay or feeding hay at 9.5 pounds of hay a day (or free-choice grass hay).

On weeks 3 or 5 (depending on length of time you are feeding starter), you need to start transitioning calf to grower diet. When transitioning between starter and grower, you can replace 25% of the starter grain/commercial feed with grower diet every 3 to 5 days until the entire concentrate portion of diet is grower. Remember, your calves are gaining weight, so each week, you will need to increase amount of concentrate offered to calves. On starter ration a good average gain values can be 1.25 to 2 pounds/day while on grower 2 to 3 pounds/day.

Another option to start cattle on feed would be to skip a "starter" ration, especially if calves have already been on a concentrate feed prior to purchase, and start calves on a grower ration. The starter ration is highly recommended if you are feeding a newly weaned calf.

If choosing to start calves with a grower, because you know they have already been consuming concentrate, follow the same guidelines as for the starter by starting growing concentrate at 0.5% of body weight and increasing by 0.5% of body weight every 7 to 10 days until they are consuming 2.5% of body weight of growing feed.

Feeding cattle on a body weight basis, is the most accurate way to feed cattle, but if you are not as comfortable doing the math, you can be safe by increasing grower concentrate feed by 1.5 pounds every 7 to 10 days for first 5 weeks, then bump concentrate amount up 0.5 pounds every week to account for calf gains, until your calf is close to 900 pounds, then transition to finishing ration. When transitioning to finishing ration, feed 25% of concentrate feed as finisher and 75% as grower for 7 to 10 days, then bump finisher 25% (as replace grower) every 7 to 10 days until no grower is being fed. It will take 4 weeks to completely transition to the finishing diet. Most commercial finishers for show cattle contain at least 50% corn

Feeding Replacement Heifer

Show heifers are not only used as a 4H project, but they must be able to become a reproductive animal that can survive on a foraging system as a cow, once the show season is finished. As such, show heifers need to be in a good body condition for showing, but not so overly conditioned that their milk potential is severely reduced. Heifers that are too fat also have issues breeding, calving, milking, and then re-breeding as a first calf heifer. Heifer daily gains will be much lower than steer gains because a show heifer does not need to be mature at show time. Depending on age of heifer and show time, your heifers targeted weights should correspond to when you plan on making the heifer a reproductive female. In general heifers need weigh about 85% of their mature weight at 2-years of age and if you are planning on breeding your heifer as a yearly she needs to weigh ~60% of her mature weight. If you have a large framed continental heifer her mature weight will probably be around 1400 pounds, therefore as a 2-year old you would like her to weight to be at least ~1190 pounds and a breeding weight at a year of age of ~840 pounds.

Once again you can do the calculations as described in the feeding market steer section to determine appropriate average daily gains for your heifers and use Table 2 to determine nutrient requirements to meet your objectives.

Example rations

The table below provides some example cattle rations to be fed as a supplement to hay (for example a heifer diet) or as a complete ration. Please read the footnotes prior to having a feed mill make any of these rations to aid in determining how to feed these rations. The amounts of feed to include are the batch-sheet which makes a ton of feed. Additionally, working with your extension professional or ruminant nutritionist can be a useful way to develop a ration to meet your animal's requirements, and before using any of these example diets, work with a nutritionist to determine best methods of feeding.

	Starter/Grower (1)		Grower/Finisher (2)		Finisher (3)	Finisher (7)
	Supplement	Ration	Supplement	Ration	Ration	Ration
Feed Ingredient	**(4)**	**(5)**	**(6)**	**(5)**	**(5)**	**(5)**
Corn	1150	425	1350	845	1160	1275
Oats	400	200	250	200	200	--
SBM – 44%	300	320	250	265	220	--
Dried Distillers Grains	--	--	--	--	--	437
Cottonseed Hulls	--	920	--	560	290	100
Soy Hull pellet	--	--	--	--	--	72
Molasses	100	100	100	100	100	75
Limestone	20	20	30	20	20	20
TM Salt	20	10	20	10	10	20
Dicalcium phosphate	10	5	--	--	--	
ADE (4 mil IU A/lb)	1.5	0.50	1	0.50	0.50	0.50
Ration Diet Composition (% as-is basis)						
Dry Matter	88.3	89.5	88.2	88.9	88.4	88.9
Crude Protein	14.3	12.1	13.2	12.0	11.9	11.5
TDN	73.9	58.2	75.1	65.5	70.8	73.8
Calcium	0.60	0.58	0.68	0.50	0.49	0.49
Phosphorus	0.43	0.28	0.33	0.27	0.29	0.36
Fat	3.1	2.0	3.1	2.5	2.9	3.9
Crude Fiber	4.2	22.5	3.4	14.9	9.2	6.7

Rations 1-3 adapted from George V. Davis Jr. Beef Cattle Nutrition, Arkansas 4-H Beef Clinic. Ration 7 developed for example purposes within K-State system with estimated steer gains between 2.75 and 3.5 lbs/d.

(1) For steers over 500 lbs expect 1.75 to 2.25 lbs average daily gain. For heifers over 500 lbs expect 1.25 to 1.75 lbs/d.
(2) For steers expect 2.5 to 3.0 lbs/d gain. For heifers 1.75 to 2.25 lbs/d.
(3) For steers expect 2.75 to 3.5 lbs/d gain. Excellent feeding management is needed with this ration.
(4) Feed supplement at 1% of cattle body weight with good quality hay or pasture to be consumed at 1.5% of body weight.
(5) Feed twice daily all cattle with consume in 30 to 45 minutes. Start feeding with hay and then gradually remove hay as adaption occurs, as described in roughages section.
(6) Feed at 1.5% of body weight with good quality hay to be consumed at 1% of body weight.

Table 1. Nutrient Requirements of Growing Steer and Heifer Calves with finishing weight of 1,300 lb

			Diet Nutrient Density						Daily Nutrients per Animal			
Wt[a] (lbs)	Gain[b] (lb/d)	DMI[c] (lbs)	TDN (%DM)	NEm (Mcal/lb)	NEg (Mcal/lb)	CP (%DM)	Ca (%DM)	P (%DM)	TDN (lbs)	NEm (Mcal/d)	NEg (Mcal/d)	CP (lbs)
Pregnant yearling heifers - Last third of pregnancy												
	0.76	18.5	50	0.45	0.20	7.3	0.22	0.13	9.3	5.89	1.13	1.35
715	2.11	19.6	60	0.61	0.35	10.2	0.36	0.19	11.8	5.89	3.45	2.00
	3.21	19.1	70	0.76	0.48	13.0	0.49	0.24	13.4	5.89	5.47	2.48
	0.76	18.5	50	0.45	0.20	6.9	0.21	0.13	10.5	6.67	1.28	1.45
845	2.11	22.2	60	0.61	0.35	9.1	0.32	0.17	13.3	6.67	3.91	2.02
	3.21	21.7	70	0.76	0.48	11.4	0.42	0.22	15.2	6.67	6.20	2.47
	2.11	24.7	60	0.61	0.35	8.3	0.28	0.16	14.8	7.43	4.35	2.05
975	3.21	24.1	70	0.76	0.48	10.2	0.37	0.19	16.9	7.43	6.90	2.46
	3.99	22.8	80	0.90	0.61	11.9	0.44	0.23	18.2	7.43	8.76	2.71

Finishing weight is based on 28% percent body fat. This table is a small representation of nutrient requirements of beef cattle. Values are from the Beef Nutrient Requirement Council (NRC).

Table 2. Nutrient Requirements of Breeding Heifers

			Diet Nutrient Density						Daily Nutrients per Animal			
Wt[a] (lbs)	Gain[b] (lb/d)	DMI[c] (lbs)	TDN (%DM)	NEm (Mcal/lb)	NEg (Mcal/lb)	CP (%DM)	Ca (%DM)	P (%DM)	TDN (lbs)	NEm (Mcal/d)	CP (lbs)	Vit. A[d] (1000 IU)
Pregnant yearling heifers - Last third of pregnancy												
700	1.4	15.8	60.3	0.60	0.34	9.0	0.33	0.21	9.6	7.95	1.4	20
700	1.9	15.8	67.0	0.70	0.43	9.8	0.33	0.21	10.6	7.95	1.5	20
800	1.4	17.4	59.6	0.59	0.33	8.8	0.33	0.21	10.4	8.56	1.5	22
800	1.9	17.5	66.1	0.69	0.42	9.3	0.35	0.21	11.6	8.56	1.6	22
900	0.9	18.3	54.3	0.51	NA	8.1	0.26	0.20	9.9	9.15	1.5	23
900	1.4	19.0	59.1	0.58	0.32	8.5	0.30	0.21	11.3	9.15	1.6	24
900	1.9	19.2	65.4	0.68	0.41	9.0	0.32	0.21	12.5	9.15	1.7	24
Two-year-old heifers nursing calves - First 3-4 months post-partum - 10 lbs milk/day												
700	0.5	15.9	65.1	0.67	0.4	11.3	0.36	0.24	10.3	9.20[f]	1.8[g]	28
800	0.5	17.6	63.8	0.66	0.39	10.8	0.34	0.24	11.2	9.81[f]	1.9[g]	31
900	0.5	19.2	62.7	0.64	0.37	10.4	0.32	0.23	12.0	10.40[f]	2.0[g]	34
1000	0.5	20.8	61.9	0.62	0.36	10	0.31	0.23	12.9	10.98[f]	2.1[g]	37

[a] Average weight for a feeding period.

[b] Approximately 0.9 + 0.2 pound of weight gain/day over the last third of pregnancy is accounted for by the products of conception. Daily 2.15 Mcal of NEm and 0.1 pound of protein are provided for this requirement for a calf with a birth weight of 80 pounds.

[c] Dry matter consumption should vary depending on the energy concentration of the diet and environmental conditions. These intakes are based on the energy concentration shown in the table and assuming a thermoneutral environment without snow or mud conditions. If the energy concentrations of the diet to be fed exceeds the tabular value, limit feeding may be required.

[d] Vitamin A requirements per pound of diet are 1,273 IU for pregnant heifers and cows and 1,773 for lactating cows and breeding bulls.

[e] Not applicable.

[f] Includes 0.34 Mcal NEm/pound of milk produced.

[g] Includes 0.03 pound protein/pound of milk produced.

K-STATE Research and Extension

Reading feed label and feeding your calf

Dr. Jaymelynn Farney, PhD
Beef Systems Specialist
Kansas State University

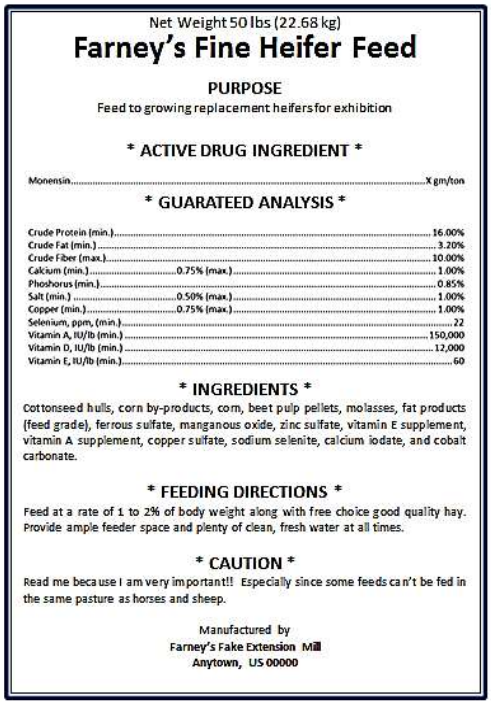
Knowledge for Life

K-STATE Research and Extension

Outline

- Parts of feed label
- Interpretation
- Which do I feed and why??

Knowledge for Life



Net Weight 50 lbs (22.68 kg)

Farney's Fine Heifer Feed

PURPOSE

Feed to growing replacement heifers for exhibition

*** ACTIVE DRUG INGREDIENT ***

Monensin ..... X gm/ton

*** GUARATEED ANALYSIS ***

Crude Protein (min.)		16.00%
Crude Fat (min.)		3.20%
Crude Fiber (max.)		10.00%
Calcium (min.)	0.75% (max.)	1.00%
Phoshorus (min.)		0.85%
Salt (min.)	0.50% (max.)	1.00%
Copper (min.)	0.75% (max.)	1.00%
Selenium, ppm, (min.)		22
Vitamin A, IU/lb (min.)		150,000
Vitamin D, IU/lb (min.)		12,000
Vitamin E, IU/lb (min.)		60

*** INGREDIENTS ***

Cottonseed hulls, corn by-products, corn, beet pulp pellets, molasses, fat products (feed grade), ferrous sulfate, manganous oxide, zinc sulfate, vitamin E supplement, vitamin A supplement, copper sulfate, sodium selenite, calcium iodate, and cobalt carbonate.

*** FEEDING DIRECTIONS ***

Feed at a rate of 1 to 2% of body weight along with free choice good quality hay. Provide ample feeder space and plenty of clean, fresh water at all times.

*** CAUTION ***

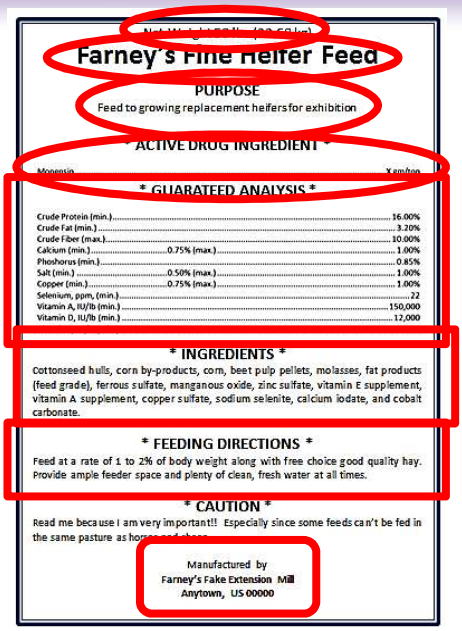
Read me because I am very important!! Especially since some feeds can't be fed in the same pasture as horses and sheep.

Manufactured by
Farney's Fake Extension Mill
Anytown, US 00000

Reading a feed tag

- Weight of bag
- Product Name
- Purpose
- Drug if included, amount, directions
- Analysis
- Ingredient
- Feeding directions
- Manufacture name and address

K-STATE Research and Extension



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Manufactured by
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Anytown, US 00000

Reading a feed tag

- Weight of bag
- Product Name
- Purpose
- Drug if included, amount, directions
- Analysis
- Ingredient
- Feeding directions
- Manufacture name and address

K-STATE Research and Extension

- What is missing from feed label that helps with cattle feeding???

Energy value

- Cattle have specific demands for calories a day to meet energy demands and for growth

Knowledge for Life

K-STATE Research and Extension

Nutrient requirements

Nutrient Requirements of Growing Steer and Heifer Calves with finishing weight of 1,300 lb

			Diet Nutrient Density						Daily Nutrients per Animal			
Wt[a] (lbs)	Gain[b] (lb/d)	DMI[c] (lbs)	TDN (%DM)	NEm (Mcal/lb)	NEg (Mcal/lb)	CP (%DM)	Ca (%DM)	P (%DM)	TDN (lbs)	NEm (Mcal/d)	NEg (Mcal/d)	CP (lbs)
715	0.76	18.5	50	0.45	0.20	7.3	0.22	0.13	9.3	5.89	1.13	1.35
	2.11	19.6	60	0.61	0.35	10.2	0.36	0.19	11.8	5.89	3.45	2.00
	3.21	19.1	70	0.76	0.48	13.0	0.49	0.24	13.4	5.89	5.47	2.48
845	0.76	18.5	50	0.45	0.20	6.9	0.21	0.13	10.5	6.67	1.28	1.45
	2.11	22.2	60	0.61	0.35	9.1	0.32	0.17	13.3	6.67	3.91	2.02
	3.21	21.7	70	0.76	0.48	11.4	0.42	0.22	15.2	6.67	6.20	2.47
975	2.11	24.7	60	0.61	0.35	8.3	0.28	0.16	14.8	7.43	4.35	2.05
	3.21	24.1	70	0.76	0.48	10.2	0.37	0.19	16.9	7.43	6.90	2.46
	3.99	22.8	80	0.90	0.61	11.9	0.44	0.23	18.2	7.43	8.76	2.71

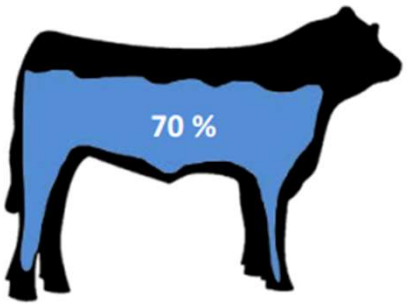
Finishing weight is based on 28% percent body fat. This table is a small representation of nutrient requirements of beef cattle. Values are from the Beef Nutrient Requirement Council (NRC).

Knowledge for Life

K-STATE Research and Extension

Needs of animal

- Water
- Energy
  - Carbohydrates
  - Lipids (fats and oils)
- Protein
- Minerals
- Vitamins



Knowledge for Life

K-STATE Research and Extension

Three stages of rations

- Starter
- Grower
- Finisher

https://shorterranch.com/winners/

http://www.ctnewsonline.com/news/article_eeb6a6ac-d5c3-11e9-ab2a-2395f6361ca4.html

Knowledge for Life

Starter ration

- 14% or greater crude protein
- > 20% crude fiber
- Low energy
  - Not a lot of corn
- Often contain antibiotics

- Newly weaned calves
- Calves that have never consumed concentrate

- 2 to 4 weeks to feed

Knowledge for Life

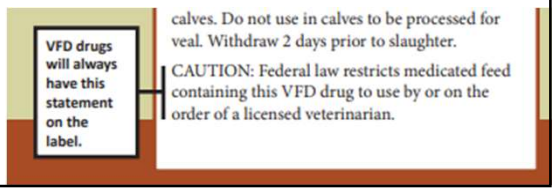
Antibiotics in starter feeds

ALWAYS ALWAYS ALWAYS

Follow label directions with antibiotics

- Decoquinate (Deccox – coccidiosis)
- Tetracycline (CTC – Auremoysin – respiratory)**
- Ionophores (coccidiosis, bloat)

** must have a VFD.



Knowledge for Life

Grower ration

- 500 to 1,000 pound calves
- >12% crude protein
- Moderate energy
- Moderate fiber (15-20% crude fiber)
- 2 to 3 pounds ADG
- Antibiotics

Photos are for illustration purposes only and not a promotion of any specific product

- Ideal ration for heifers if fed at 1 to 1.5% of body weight

Knowledge for Life

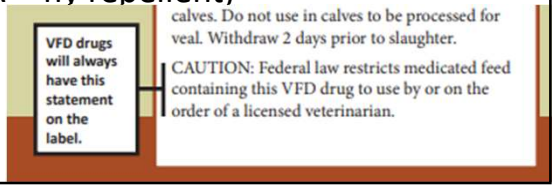
Antibiotics in starter feeds

ALWAYS ALWAYS ALWAYS

Follow label directions with antibiotics

- Ionophores (coccidiosis, bloat)
- Decoquinate (Deccox – coccidiosis)
- Tetracycline (CTC – Auremoysin – respiratory)**
  - Short duration – 7-10 days at most
- Difubenzuron (IGR – fly repellent)

** must have a VFD.



Knowledge for Life

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Finishing ration

- < 12% crude protein
- Crude fiber 12-15%
- High energy
  - > 50% corn
- Feed 70 to 120 days before final endpoint
- Antibiotics

- When to start feeding finishing ration
  - Small frame, early maturing – 1,000 lbs
  - Large frame, late maturing – 800 lbs

Knowledge for Life

K-STATE Research and Extension

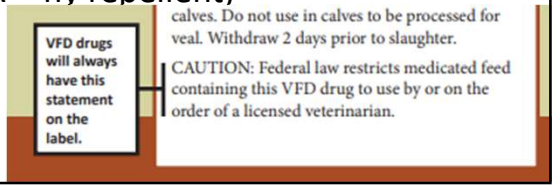
Antibiotics in starter feeds

ALWAYS ALWAYS ALWAYS

Follow label directions with antibiotics

- Ionophores (coccidiosis, bloat)
- Tylosin phosphate (Tylan - liver abscess)**
- Tetracycline (CTC – Auremoysin – respiratory)**
  - short duration – 7-10 days at most
- Difubenzuron (IGR – fly repellent)

** must have a VFD.



Knowledge for Life

K-STATE Research and Extension

Which feed?

Active Drug Ingredient

Monensin (as Monensin sodium) ..... 34 g/ton
Diflubenzuron (CAS# 35367-38-5)..... 5.7 gr/ton

For Improved Feed Efficiency.
For increased rate of weight gain in growing cattle on pasture or in a dry log (Stocker and Feeder; dairy and beef replacement heifers).
For preventing development of flies in manure of treated animals

Guaranteed Analysis

Crude Protein, not less than 11.0%
(this includes nor more than 2.5% equivalent protein from non protein nitrogen sources)
Crude Fat, not less than 3.5%
Crude Fiber, not more than 11.0%
Calcium (Ca), not less than 0.6%
Calcium (Ca), not more than 1.1%
Phosphorus (P), not less than 0.35%
Salt (NaCl), not more than 0.2%
Salt (NaCl), not more than 0.7%
Potassium (K), not less than 0.6%
Selenium (SE), not less than ..... 0.3 ppm
Vitamin A, not less than ..... 2500 IU/LB

Ingredients

Grain Products, Forage Products, Processed Grain By-Products, Roughage Products, Plant Protein Products, Molasses Products, Yeast Culture, Calcium Carbonate, Dried Bakery Product, Salt, Mono and Dicalcium Phosphate, Calcium Propionate (a preservative), Anti-Caking Agent, Magnesium Oxide, Vitamin E Suppliment, Mineral Oil, Vitamin A Supplement, Ferrous Sulfate, Zinc Amino Acid Complex, Manganese Amino Acid Complex, Copper Amino Acid Complex, Cobalt Glucoheptonate, Manganese Sulfate, Zinc Oxide, Zinc Sulfate, Copper Sulfate, Sodium Selenite, Vitamin D3 Supplement, Ethylenediamine Dihydriodide, Choline Chloride, Niacin Supplement, Cobalt Carbonate, D Calcium Pantothenate, Riboflavin Supplement, Vitamin B12 Supplement, Folic Acid, Thiamin Mononitrate, Pyridoxine Hydrochloride, Biotin Supplement, Natural and Artificial Flavors.

Knowledge for Life

A

GUARANTEED ANALYSIS:

Crude Protein	Min.	14.0	%
Crude Fat	Min.	2.5	%
Crude Fiber	Max.	22.0	%
Calcium	Min. 1.0 % Max.	1.5	%
Phosphorus	Min.	0.3	%
Salt	Min. 0.7 % Max.	1.2	%
Potassium	Min.	1.25	%
Vitamin A	Min.	5,000	IU/LB

B

Starting calf of feed – calf has never eaten concentrate

K-STATE Research and Extension

Which feed??

Active Drug Ingredient

Monensin (as Monensin sodium) ..... 40 g/ton
Diflubenzuron (CAS# 35367-38-5)..... 6.8 gr/ton

For Improved Feed Efficiency.
For increased rate of weight gain in growing cattle on pasture or in a dry log (Stocker and Feeder; dairy and beef replacement heifers).
For preventing development of flies in manure of treated animals

Guaranteed Analysis

Crude Protein, not less than 13.0%
(this includes nor more than 2.5% equivalent protein from non protein nitrogen sources)
Crude Fat, not less than 3.5%
Crude Fiber, not more than 11.0%
Calcium (Ca), not less than 0.6%
Calcium (Ca), not more than 1.1%
Phosphorus (P), not less than 0.35%
Salt (NaCl), not more than 0.2%
Salt (NaCl), not more than 0.7%
Potassium (K), not less than 0.6%
Selenium (SE), not less than ..... 0.3 ppm
Vitamin A, not less than ..... 2500 IU/LB

A

GUARANTEED ANALYSIS:

Crude Protein	Min.	12.0	%
Crude Fat	Min.	2.5	%
Crude Fiber	Max.	15.0	%
Acid Detergent Fiber (ADF)	Max.	15.0	%
Neutral Detergent Fiber (NDF)	Max.	25.0	%
Calcium	Min. 1.4 % Max.	1.9	%
Phosphorus	Min.	0.4	%
Salt	Min. 0.5 % Max.	1.0	%
Sodium	Min. 0.2 % Max.	0.7	%
Potassium	Min.	0.5	%
Selenium	Min.	0.3	ppm
Zinc	Min.	105	ppm
Vitamin A	Min.	3,000	IU/LB

B

Grower ration for calf you know has been on feed for a little while

Knowledge for Life

K-STATE Research and Extension

A

Active Drug Ingredient

Monensin (as Monensin sodium) ..... 34 g/ton
Diflubenzuron (CAS# 35367-38-5)..... 5.7 gr/ton

For Improved Feed Efficiency.
For increased rate of weight gain in growing cattle on pasture or in a dry log (Stocker and Feeder; dairy and beef replacement heifers).
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Phosphorus (P), not less than 0.35%
Salt (NaCl), not more than 0.2%
Salt (NaCl), not more than 0.7%
Potassium (K), not less than 0.6%
Selenium (SE), not less than ..... 0.3 ppm
Vitamin A, not less than ..... 2500 IU/LB

B

GUARANTEED ANALYSIS:

Crude Protein.....Min. 12.0 %
Crude Fat.....Min. 3.5 %
Crude Fiber.....Max. 15.0 %
Calcium...Min. 0.65 % Max. 0.9 %
Phosphorus.....Min. 0.28 %
Salt.....Min. 0.5 % Max. 1.0 %
Potassium.....Min. 0.6 %
Vitamin A.....Min.2,000 IU/LB

Finishing ration

Knowledge for Life

Energy - concentrates

- Corn
  - Most common feed grain in the US
  - Highest energy value
  - Low fiber
  - Low protein
  - If have <20% roughage in diet, feed corn whole
  - If >20% roughage, process corn for increased digestibility
  - Mycotoxin is a potential issue with corn

Knowledge for Life

Processing of concentrates

- Steam-flaked

- Rolled/cracked

- Ground

Starch rate of digestibility - faster greater chances of ruminal acidosis and bloat

FAST

DR wheat
DR barley
HM corn (bunker)
SR wheat, SR barley
★
SF corn, HM corn (stored whole)
SF grain sorghum
DR corn, HM & Recon. sorghum
Whole shelled corn

SLOW

DR = dry rolled
HM = high moisture
SR = steam rolled
SF = steam flaked

Milo (Sorghum)

- Very common in southern US, and some in Kansas because of drought-tolerance
- Must be processed
- Once processed can replace corn in diet pound-for-pound
- Low protein

Oats

- High fiber
  - Few problems with digestive upset
- Lower energy than corn
- Higher protein than most grains
- Great to start young animals on feed
- Often used in show diets for maintenance
- Can be process
  - Steam-flaked, rolled
- Expensive (usually as compared to corn)
  - Alternative to oats (70-75% corn, 15-20% cottonseed hulls, 10-15% cottonseed meal)

Barley, Wheat, and Beet Pulp

- Barley
  - Can replace 50% of the corn or sorghum
  - Can cause digestive problems
  - Often perceived to increase "handle" in cattle
    - Water intake plays a MUCH larger role
- Wheat
  - High energy, but high risk of digestive problems
  - Price and risk usually don't allow wheat to be included in show diets

- Beet pulp
  - Palatable
  - 85% energy of corn and high fiber – very safe

Protein

- Reported as crude protein on feed tags

  Nitrogen units of feed x 6.25 = Crude protein
- Protein will be used by microbes to make microbial crude protein (MCP) which goes to the small intestine to be converted to amino acids that the animal uses for muscle, fat, and milk production.
- Some by-pass protein will escape rumen and in the small intestine be converted to amino acids for the animal to use
- Growing cattle need 12-15% CP diets

Protein sources

- Soybean meal
  - Most common protein source in US
  - Similar energy to corn
  - 44-48% CP

- Cottonseed meal
  - Lower energy than corn
  - High protein

- Dried distillers grains
  - 90-110% energy of corn
  - ~30% crude protein
  - 6-10% fat
  - High sulfur

Minerals and Vitamins

- Minerals
  - Required for growth
  - Calcium, phosphorus, salt are most important for beef animals and growing replacements
  - Zinc, copper, manganese, magnesium, and selenium important for health, immune function, hair coat, and reproduction
- Vitamins
  - Only ones that need to be added to diet are A,E
  - All other vitamins are synthesized by rumen microbes or by the animal itself (sunlight)

K-STATE
Research and Extension

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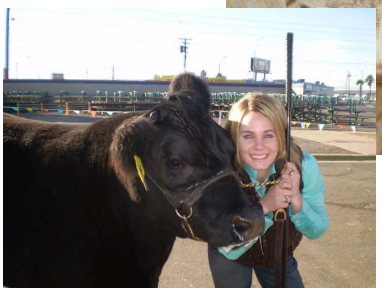

Knowledge for Life

Introduction to Barbecue And Meat Science

Kansas State University
Jr. Beef Producers Day

Erin Beyer, Ph.D.
Lane Egger, M.S.
Kansas State University

KANSAS STATE UNIVERSITY

What is Barbecue?

GRILLING VS BBQ

Grilling ≠ Barbecue

K·STATE Research and Extension

GRILLING

Grilling

- High temperature (> 500°F)
- Very Fast (minutes)
- Direct heat
- Meat cooked directly above heat source
- May involve smoking
- Meat tenderness is not improved

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BARBECUE

Barbecue

- Low temperature (225 - 350°F)
- Slow (hours)
- Indirect heat
- Meat cooked away from meat source
- Typically involves use of hardwood smoke
- Tenderness of tougher cuts is improved through collagen breakdown

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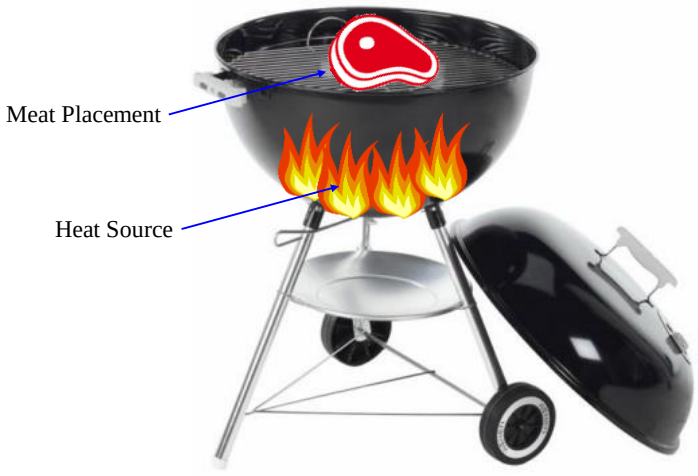
GRILLING – DIRECT HEAT

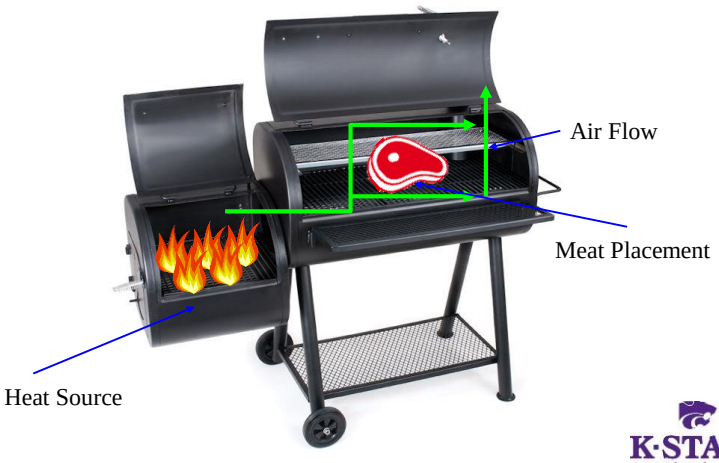
Meats are placed directly above heat source (temperatures > 450°F)



TATE and Extension

BARBECUE – INDIRECT HEAT

Meats are placed away from heat source (temperatures < 300°F)
Prevents large meats from burning or scorching while cooking



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MEAT CHARACTERISTICS

Grilling

- Tender Cuts
- Thin Cuts; steaks, chops, chicken parts
- Any fat level

Barbecue

- Can Use Tougher Cuts
- Thick Cuts; roasts, whole chickens
- Typically use meats with higher fat contents

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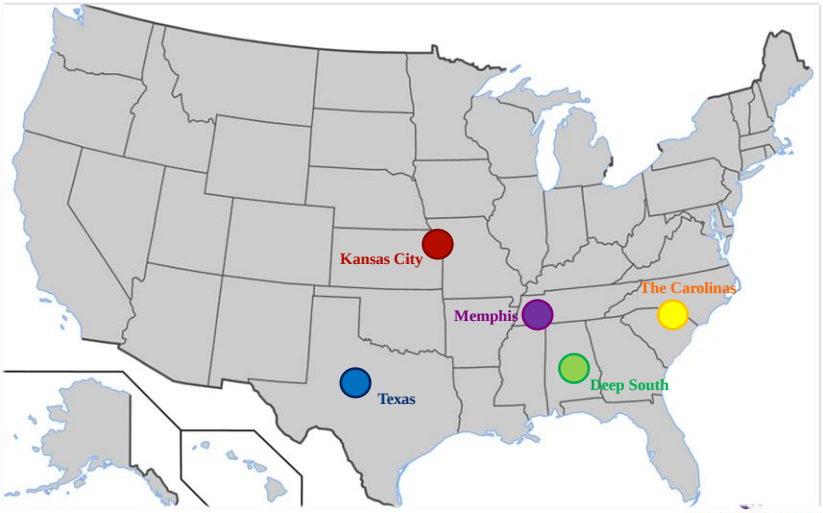
BARBECUE REGIONS



K-STATE Research and Extension

BARBECUE WOODS

- The wood used for BBQ has a large impact on the flavor of the end product
- Woods that provide most smoke flavor – hickory, pecan, oak, mesquite
- Fruit woods provide lighter smoke flavors – apple, peach, cherry, maple
- Regardless, only hardwoods should be used for smoking. Never use pine or other soft woods

K-STATE Research and Extension

All About Meat

MEAT COMPOSITION

Meat – muscle tissues from animals used for food

What makes up meat?

- Water – 75%
- Protein – 18.5%
- Fat – 3%
- Carbohydrates – 1%
- Mineral – 1%

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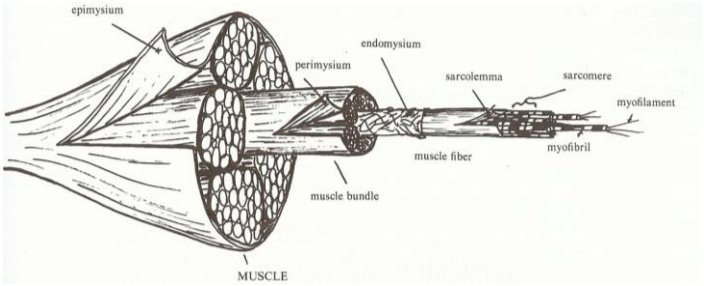
MEAT STRUCTURE



- Muscle is a highly organized tissue

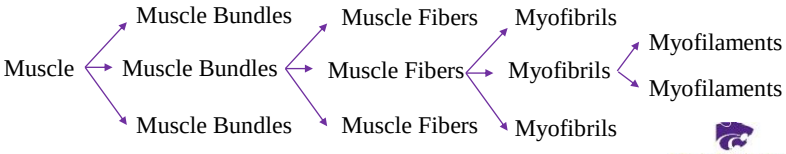
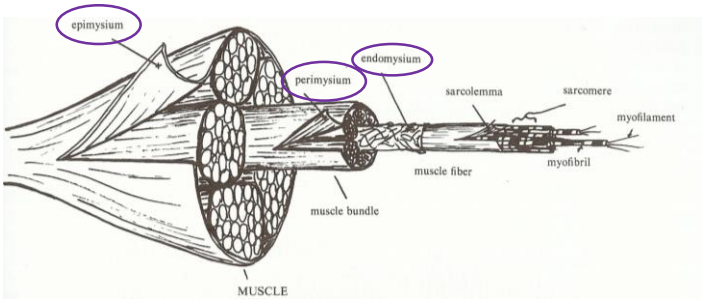


Image: Principles of Meat Science

K·STATE Research and Extension

MEAT STRUCTURE



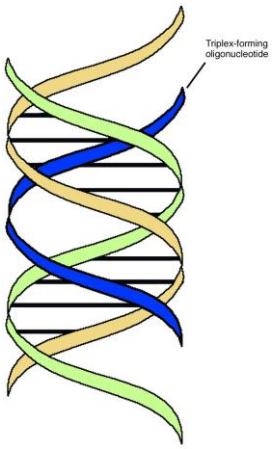
- Each layer is surrounded by a connective tissue sheath
- Typically, epimysium can be removed prior to cooking, however the other two are always eaten
- Each sheath is comprised of primarily collagen

Image: Principles of Meat Science

K·STATE Research and Extension

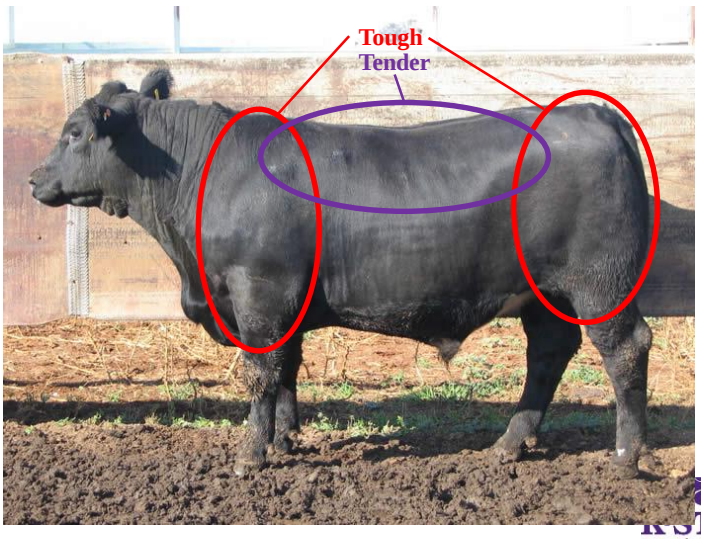
COLLAGEN

- Collagen is a very tough connective tissue
- Most abundant protein in the body
- Compound most responsible for tenderness variation among muscles in the animal
- Muscles high in connective tissue (collagen) are very tough and are subsequently less valuable



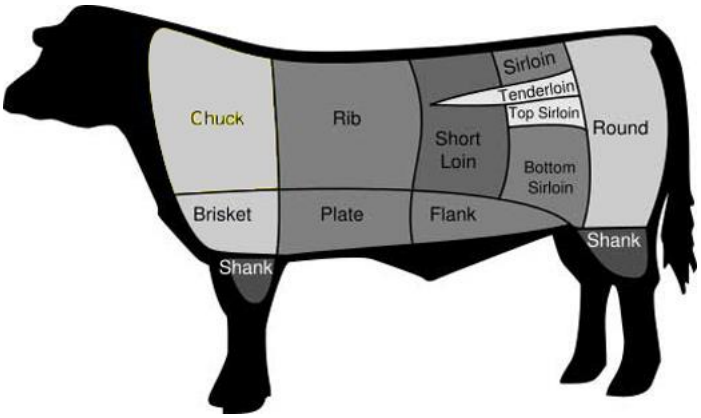
K-STATE Research and Extension

COLLAGEN



K-STATE Research and Extension

COLLAGEN



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COLLAGEN BREAKDOWN

- Collagen will turn into gelatin when cooked correctly
- Collagen will, with moist heat, turn to gelatin at temperatures from 156ºF to 185ºF
- However, this transition takes time, typically hours
- Low temperatures are needed for cooking so that meats are not fully dried out during cooking
- Thus, “low and slow” barbecue cooking techniques are required for tenderization of tough meats

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BEST ADVICE OF THE DAY

The most important tip for excellent grilling & barbecue is…..

USE A FOOD THERMOMETER!!!

- Using a food thermometer is the only way to consistently insure meat is cooked to the appropriate temperature for both food safety and eating satisfaction
- For an accurate temperature reading, thermometer should be inserted in the center (equal distance from both grilled surfaces) of the cut
- Remove cuts from the grill about 5-8°F below desired end-point as temperature will continue to rise ("carry-over cooking") in the first 3 to 4 minutes after being removed from the grill.


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GRILLING DEGREES OF DONENESS

Degree of Doneness	Final Temperature (°F)
USDA Recommended Temperature for Food Safety (whole muscle cuts)	140
USDA Recommended Temperature for Food Safety (ground products)	160
Rare	140
Medium-Rare	150
Medium	160
Medium-Well	165
Well-Done	170
Ground Products	165
Poultry	160

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BARBECUE TIMETABLE (225°F)

Meat	Final Temperature (°F)	Approximate Time (hrs)
Pork		
Baby Back Ribs	180	4 – 6
Spareribs	180	5 – 7
St. Louis Style Ribs	180	5 - 7
Whole Shoulder	185	18 - 20
Boston Butt (for pulling)	185	10 - 12
Pork Loin	145 – 160	8 - 10
Whole Hog	185	16 - 24
Sausage	160	1 - 3
Beef		
Brisket	200	12 - 18
Tri-tip	140	2.5 – 3
Prime Rib	140	6 – 8
Tenderloin	140	3 – 4
Clod	185 – 200	12 – 18
Chuck Eye Roll	185 – 200	12 – 18
Poultry		
Whole Chicken	160	3 – 5
Whole Turkey	160	7 - 8
Chicken Thighs	160	1 - 2
Other Meats		
Lamb Leg	140 – 160	4 – 8
Cabrito (goat)	170 – 180	4 – 5
Fish (filets)	160	1 - 2

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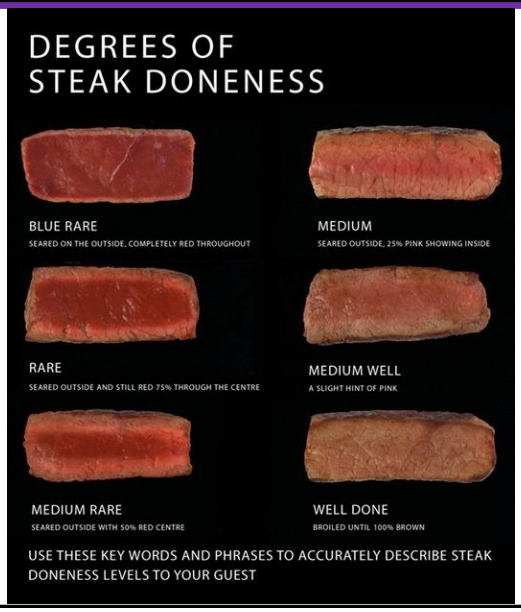
sion

DEGREE OF DONENESS



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MEAT LABEL PARTS

There are 5 parts that are required to be on a meat label:

- Product name
- Inspection legend with establishment number
- Address line
- Net weight or quantity statement
- Ingredient statement

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MEAT SELECTION

- Not all steaks are created equal!
- "Steak" just means cut is less than 2 in thick; can be any muscle
- Use primal cut listed on label as a guide for cooking

Retail Cut Name

Primal Name

Species

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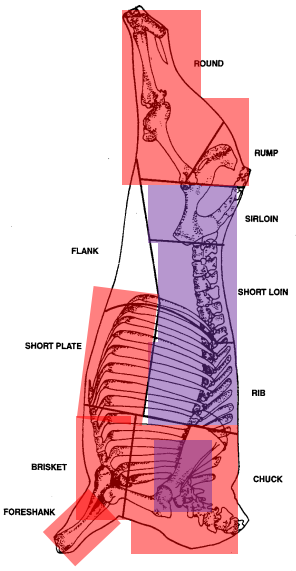
BEEF PRIMALS



Beef Primals for Grilling:

- Loin
- Rib
- Sirloin
- Some Cuts from Chuck

Beef Primals for Barbecue/Slow Cooking:

- Round
- Chuck
- Brisket
- Plate
- Shank

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LOIN CUTS

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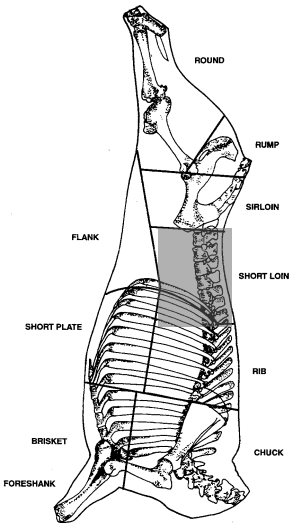
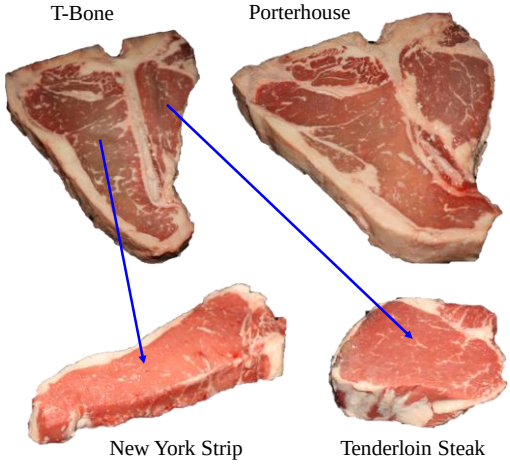
BEEF STEAKS



T-Bone

Porterhouse



New York Strip

Tenderloin Steak

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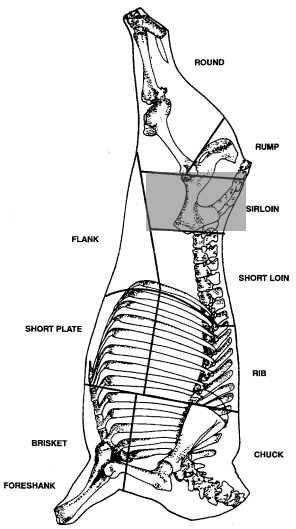
BEEF STEAKS



Bone-in
Sirloin Steak

Top Sirloin Steak

Sirloin Steak

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RIB CUTS

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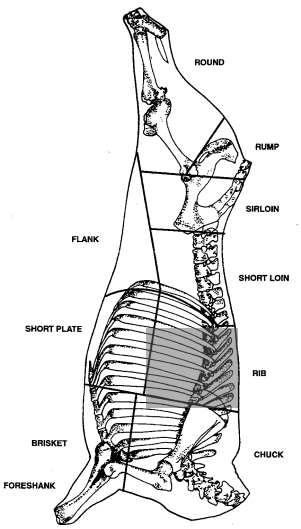
BEEF STEAKS



Ribeye

Ribeye Roast

Tomahawk Steak

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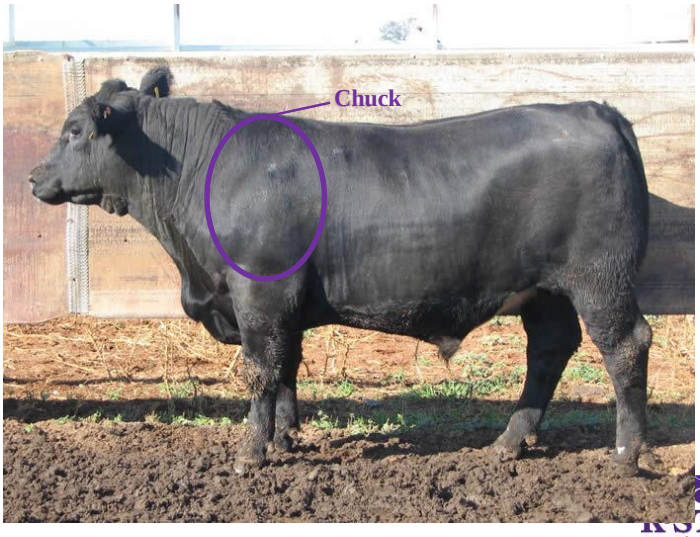
CHUCK CUTS



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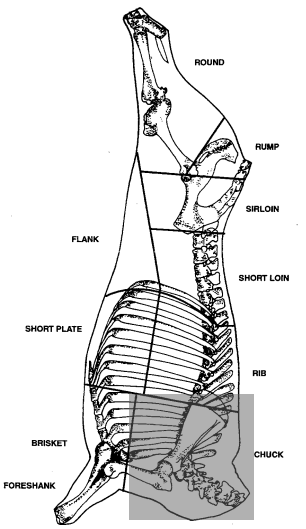
NEW BEEF STEAKS



Petite Tender

Flat Iron

Delmonico Steak

Denver Steak

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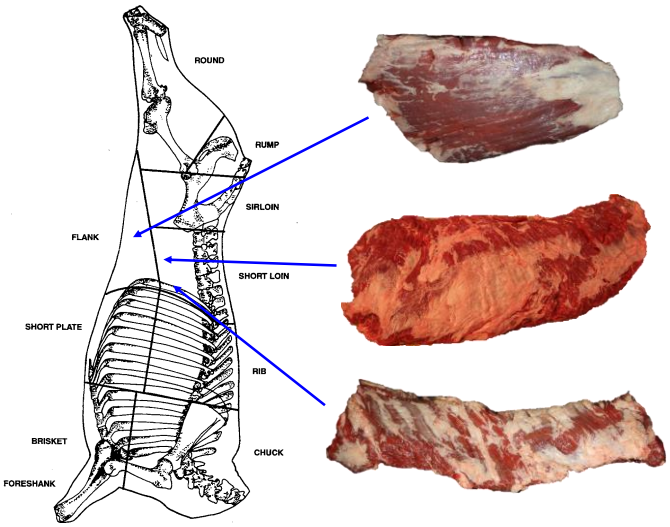
BEEF FOR FAJITAS



Flank Steak

Flap Meat

Skirt Steak

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BRISKET

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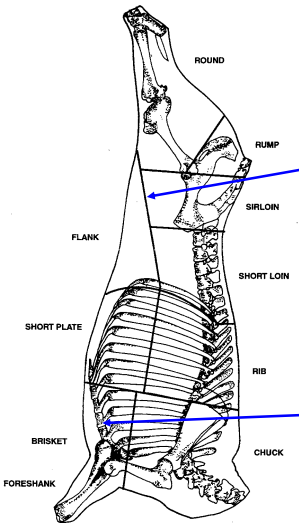
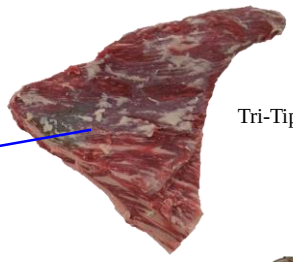
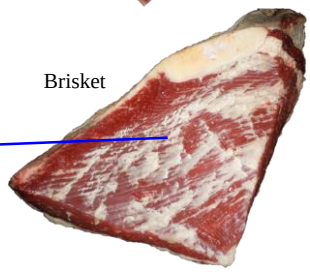
CLASSIC BEEF CUTS FOR BBQ





Tri-Tip



Brisket

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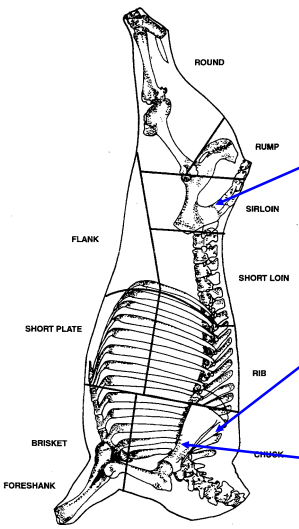
NEW BEEF CUTS FOR BBQ



Coulotte
(sirloin cap)

Chuck Roll

Beef Clod

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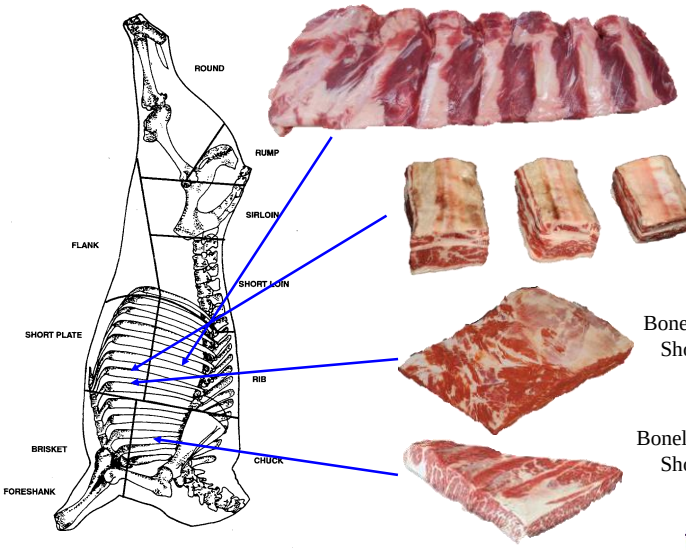
BEEF RIBS



Back Ribs

Short Ribs

Boneless Plate Short Ribs

Boneless Chuck Short Ribs

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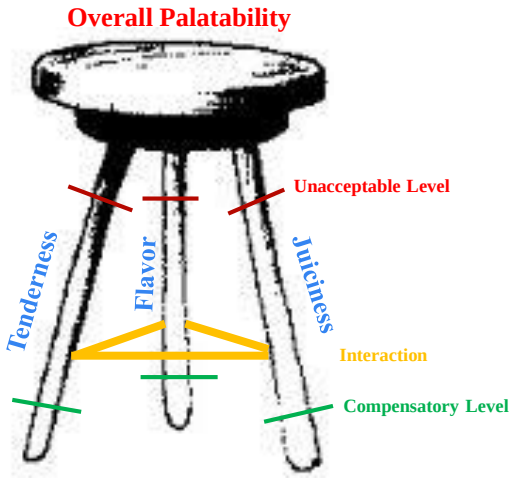
Eating Satisfaction

EATING SATISFACTION



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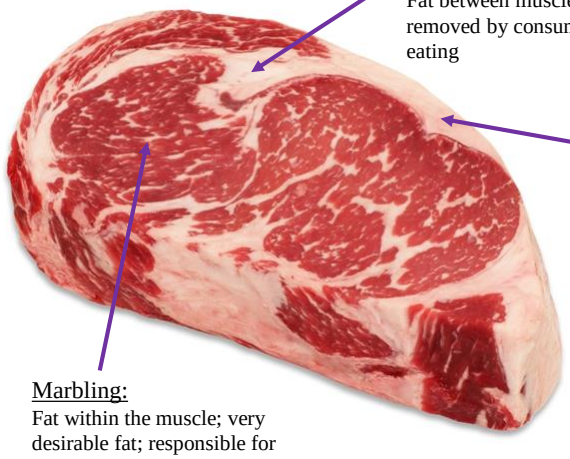
FAT



Seam Fat:
Fat between muscles; typically removed by consumers while eating

External Fat:
Typically trimmed off prior to purchase, waste

Marbling:
Fat within the muscle; very desirable fat; responsible for juiciness, tenderness, and flavor

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ADDITIONAL RESOURCES

For recipes and additional information on grilling and smoking:

www.amazingribs.com

www.smoking-meat.com

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Questions?

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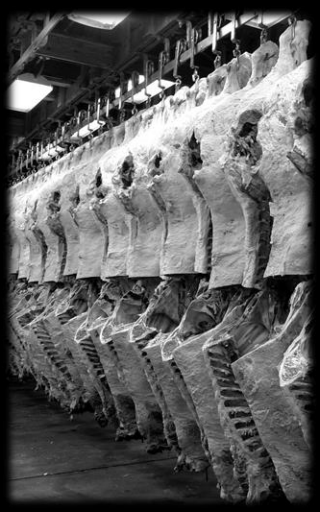
402-276-9934



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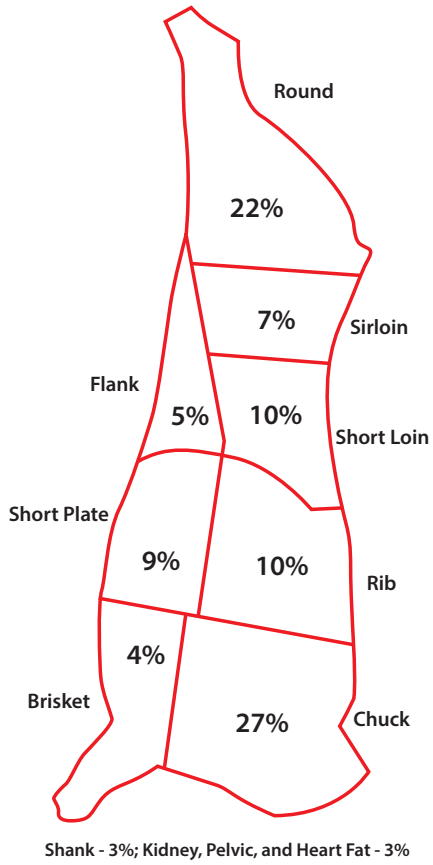
Beef Processing Options for Consumers



The primal cuts of beef as a percentage of carcass weight.

This guide explains choices available to consumers when they take a beef animal to be processed. It provides information on the approximate amount of meat that should be returned from each primal after the animal has been prepared to customer specifications.

Chuck: The chuck is commonly cut into bone-in or boneless roasts of specified thickness or weight. Alternatively, the chuck can be cut into bone-in steaks and some boneless steaks. Ranch steaks, flat iron steaks, and petite tender steaks are boneless steaks commonly produced from the chuck. Some of the chuck also can be used for stew meat or ground beef.

Rib: Normally, the rib is cut into either bone-in ribeye steaks or boneless ribeye steaks and back ribs. Consumers may prefer the rib to be cut into either boneless or bone-in roasts for cooking of prime rib.

Short loin: Two options for cuts from the short loin are T-bones and porterhouse steaks or boneless New York strip steaks and tenderloin steaks (filets). T-bones and porterhouses are larger cuts. The boneless options are typically selected by consumers who desire smaller portion sizes.

Sirloin: The sirloin can be cut into either boneless or bone-in steaks. Because of the large size of bone-in sirloin steaks, customers may prefer smaller boneless alternatives. Additionally, the coulotte roast (sirloin cap) can be cut from the sirloin or cut as part of the sirloin steaks. The tri-tip is typically cut as a roast from the sirloin as well.

Round: Cut options from the round include tip roasts, rump roasts, heel roast, and top, bottom, and eye-of-round roasts of a specified size and weight. The round can also be cut into steaks, with many customers choosing to have some of these steaks tenderized (for chicken fried steak) or to have this product produced into ground beef.

Ground beef: Consumers can specify leanness of ground beef, commonly 90%, 80%, or 70% lean, but can expect fewer pounds of ground beef with increased lean points.

Miscellaneous: Each carcass half has one brisket and flank steak as well as two skirt steaks. Briskets can either be whole or cut into two halves (flat half and point half). The plate can be returned as short ribs or used for ground beef. Organs (heart, liver, kidneys, oxtail, and tongue) are optional.

Beef Cutout Tables

The numbers below are based on an 800-pound, Low Choice, Yield Grade 3 carcass and represent the industry average. A 3% shrink (cooler shrink and cutting loss) is assumed. The table shows boneless and bone-in options and the approximate weight and percentage of the hot (unchilled) carcass represented by each.

Boneless Option	% of Hot Carcass	Weight (lbs)
Chuck		
Chuck eye roasts or steaks	4.1	32.8
Mock tender roasts or steaks	0.8	6.2
Flat iron steaks	1.3	10.3
Shoulder petite tender steaks	0.3	2.1
Ranch steaks or boneless arm roasts	1.5	12.3
Denver steaks	0.8	6.2
Boneless short ribs	0.3	2.1
Ground beef / stew meat	12.8	102.6
Fat and bone	3.8	30.8
Rib		
Ribeye steaks or boneless rib roasts	3.5	28.1
Back ribs	1.0	7.9
Ground beef or stew meat	3.2	25.8
Fat and bone	1.8	14.4
Loin		
Strip loin steaks	3.1	24.5
Tenderloin steaks or roasts	1.5	11.6
Top sirloin steaks (cap-off)	2.1	16.8
Coulotte (sirloin cap)	0.5	3.9
Tri tip roast	1.1	9.0
Ground beef	4.2	33.6
Fat and bone	3.7	29.7
Round		
Top round steaks and roasts	5.6	45.1
Bottom round steaks and roasts	3.7	29.4
Eye of round steaks and roasts	1.3	10.8
Tip steaks and roasts	2.9	23.4
Ground beef / stew meat / kabob meat	2.9	23.3
Fat and bone	4.4	35.1
Miscellaneous		
Brisket	3.2	25.8
Flank steak	0.5	3.8
Short ribs	6.3	50.2
Skirt steaks	1.1	9.1
Kidney, pelvic, and heart fat	2.0	16.0
Ground beef	5.4	43.1
Fat and bone	6.3	50.2
Total steaks and roasts	46.4	371.4
Total ground beef / stew meat	28.6	228.5
Total fat and bone	22.0	176.2

Bone-in Option	% of Hot Carcass	Weight (lbs)
Chuck		
Blade roasts and steaks	10.2	81.8
Bone-in arm roasts and steaks	7.6	60.9
Ground beef / stew meat	5.0	39.9
Fat and bone	2.8	22.7
Rib		
Bone-in ribeye steaks or roasts	4.5	35.7
Ground beef / stew meat	3.2	25.8
Fat and bone	1.8	14.4
Loin		
T-bones and porterhouses	4.5	36.2
Bone-in sirloin steaks	3.1	24.5
Tri tip roast	1.1	9.0
Ground beef	4.2	33.6
Fat and bone	3.2	25.8
Round		
Top round steaks and roasts	5.6	45.1
Bottom round steaks and roasts	3.7	29.4
Eye of round steaks and roasts	1.3	10.8
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Ground beef / stew meat / kabob meat	2.9	23.3
Fat and bone	4.4	35.1
Miscellaneous		
Brisket	3.2	25.8
Flank steak	0.5	3.8
Short ribs	6.3	50.2
Skirt steaks	1.1	9.1
Kidney, pelvic, and heart fat	2.0	16.0
Ground beef	5.4	43.1
Fat and bone	6.3	50.2
Total steaks and roasts	55.7	445.9
Total ground beef / stew meat	20.7	165.7
Total fat and bone	20.5	164.2

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A Guide to Beef Cuts – Beef Retail. 2017. National Cattlemen's Beef Association, Centennial, CO. Available from: http://www.beefretail.org/

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How Much Meat to Expect from Your Animal

Have you ever taken your steer to the butcher at 1,300 pounds and been confused when you were only returned 500 pounds of cut and packaged beef? Like many consumers, you may be unaware of the steps in animal processing that result in changes in product weight. Some changes occur in converting the live animal to a carcass, and more before the animal becomes packaged meat. This guide explains the process and provides tools to help you determine the amount of meat to expect when you have an animal harvested.

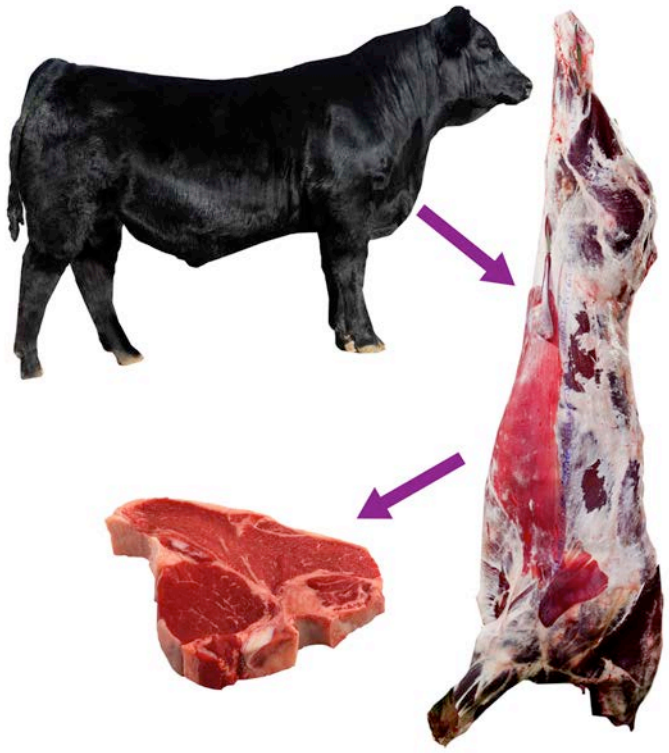
From live animal to carcass in the cooler

The first step is to convert the live animal to a carcass. The amount of the live animal's weight represented by the carcass, or *dressing percentage*, can be calculated as follows:

Dressing percentage: (carcass weight ÷ live weight) x 100

Next, the animal's blood, hide, and internal organs are removed, which results in weight loss. The amount of weight lost is highly variable and can be affected by many characteristics, including:

- Mud or manure on the hide of the animal
- The amount of food in the animal's stomach (gut fill)
- Bruises that must be trimmed from the carcass
- Hide or wool weight
- Horns
- Animal muscling and fatness



Species differences

The dressing percentage varies for each species because animals carry body weight differently. Pork has the highest dressing percentage (70-75%) because skin and feet remain on the carcass, and because hogs are monogastrics with single-compartment stomachs. Lambs have the lowest dressing percentage (54-59%) because of heavy hides and less muscling on the carcass. The beef dressing percentage (60-64%) falls between pork and lamb.

Average dressing percentage for the three major meat species

Species	Average dressing percentage (%)
Pork	70-75
Beef	60-64
Lamb	54-59

From whole carcass to retail cuts

Estimating the carcass weight of an animal is fairly easy because the process is standard across the industry. Predicting the weight returned as cuts of meat is much more difficult. A carcass can be processed into cuts (steaks, roasts, and ground meat) in multiple ways. The final weight varies depending on the processing style and cuts requested. Customers have many options and may be able to customize their order, adding even more variability to the equation. Here are a few choices that can affect the weight of the finished product:

- **Bone-in vs. boneless cuts**: Removing the bone results in less weight returned as product.
- **Fat percentage in the ground product**: A leaner product produces fewer pounds of ground meat.
- **Aging**: Longer aging periods improve meat tenderness but lead to moisture loss and less weight returned.
- **Type of aging (dry-aged vs. wet-aged)**: Dry-aged products result in more moisture loss due to dehydration and additional trimming losses due to surface crust removal.
- **Further processing**: Having cuts processed into cooked sausages, hams, bacon, corned beef, and similar products results in fewer pounds of returned product because of the moisture lost during the cooking process.

The amount of meat returned after harvesting an animal varies. The following examples should help consumers understand where the weight of the live animal goes and guide expectations on the approximate amount of meat to expect. Other fact sheets in this series describe processing options for individual species.

Example for beef:
Live weight = 1,290 lbs
Actual dressing %: 62%
Carcass weight = 800 lbs
Bone-in option: 65-70% of carcass weight
Boneless option: 55-60% of carcass weight
Approximate bone-in meat returned = 520 lbs
OR approximate boneless meat returned = 440 lbs

Example for pork:
Live weight = 285 lbs
Actual dressing %: 72%
Carcass weight = 205 lbs
Bone-in option: 75-80% of carcass weight
Boneless option: 65-70% of carcass weight
Approximate bone-in meat returned: 154 lbs
OR Approximate boneless meat returned = 133 lbs

Example for lamb:
Live weight = 132 lbs
Actual dressing %: 55%
Carcass weight = 70 lbs
Bone-in option: 70-75% of carcass weight
Approximate bone-in meat returned = 50 lbs

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Building a Herd from the Breeding Heifer Project

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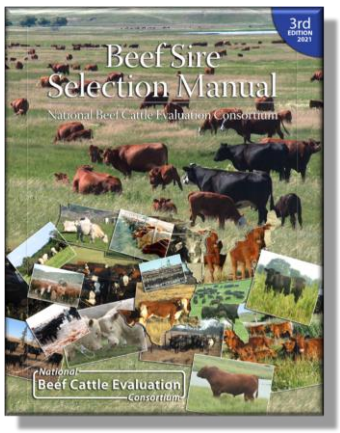
How To Get from This…

KANSAS STATE UNIVERSITY

…To This

Skill Areas

- Genetics and Selection
- Nutrition
  - Growing
  - Breeding Herd
- Reproductive Management
  - Breeding
  - Calving
- Animal Health
  - Vaccinations



www.KSUbeef.org

Genetics and Selection

- Pick a pretty one!!
- Manage her right
- EPDs/Indexes
  - Breed average or better CED, CEM, growth
- Service sire for her first calf
  - Minimize dystocia!!!
  - CED EPD in top 25% for British, 20% for Continental/Composites

Nutrition – Growing Heifer

- Target Weights (1,450 lb mature weight)
  - Breeding @15 m – 940
    - (65% of mature weight)
    - 550 lb weaned heifer must gain 1.75 lb/d.
  - Calving @24 months – 1,230
    - (85% of mature weight)
    - Must gain ~300 lb in ~240 days – 1.25 lb/d.
- Body Condition
  - 6+ at calving but ***not too*** fat!!!

Nutrition – Growing Heifer

- Hay -- Free choice good quality brome/native
- Supplemental Feed
  - Target ~2.5 lbs gain per day
  - Feed same time every day!
  - Purchase small digital platform or fish scale ~$20-30 to help measure feed
  - Amount…. Work up to 2% of body weight/day in supplement fed ½ morning, ½ evening
    - 600 lb – 12 lb/d
    - 800 lb – 16 lb/d
  - 14-15% crude protein in supplement
  - Salt/Mineral – 2-4 oz / d in feed. … we use IGR

Nutrition – Breeding Animal

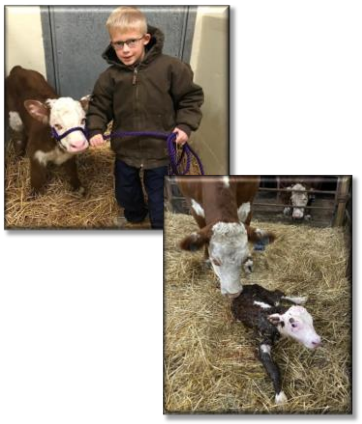
- Free choice salt and loose mineral
  - Good quality
  - Consider product with IGR fly control
  - Supports health and reproduction
- Primary Concerns
  - Protein – supplement when on dormant forage or hay – cubes, tub, alfalfa hay
  - Energy – Lactating before green up
    - Protein and good quality brome/prairie hay may get close

Reproduction-Breeding

- Estrus Detection?
  - Detection aides
  - Market steer project
- Synchronization
  - Veterinarian can provide products
  - Timed AI (vet or AI company rep)
  - Hand mating natural service
    - Bull from breeder or neighbor or project leader?

Reproduction-Calving

- VCPR-Veterinary Client Patient Relationship!
- Equipment
  - OB Chains/Strap
  - Novasan
  - OB Gloves
  - Lube
- Attend Dr. Tarpoff's Calving School!!!!



Animal Health

- Vaccinations
  - Blackleg/Tetanus
  - Leptospirosis
  - Vibriosis
  - IBR/BVD/PI3
  - Pinkeye
- Parasites
  - Internal
    - Worms/Flukes
  - External
    - Fly control
    - Lice
    - Ringworm
- VCPR!

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Thank You!

Questions?

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Breeding Heifer Development & Management Resources

Sire Selection

Beef Sire Selection Manual
https://ebeef.ucdavis.edu/2021-nbcec-beef-cattle-sire-selection-manual

Nutrition

Nutrient Requirements of Beef Cattle
https://extension.okstate.edu/fact-sheets/print-publications/e/nutrient-requirements-of-beef-cattle-e-974.pdf

Body Condition Scoring Beef Cows and Bulls
https://bookstore.ksre.ksu.edu/pubs/MF3274.pdf

Nutritional Management of Cows By Body Condition Score
https://bookstore.ksre.ksu.edu/pubs/MF3275.pdf

Questions and Answers on Beef Cattle Nutrition
https://bookstore.ksre.ksu.edu/pubs/C733.pdf

Reproduction

Beef Cow Reproductive Management
https://beefrepro.org/

Beef Cattle Synchronization Tips
https://bookstore.ksre.ksu.edu/pubs/MF2574.pdf

Health & Vaccination

Cow-Calf Vaccination on YouTube : Capitalizing on Calf Health, Angus University, Dr. AJ Tarpoff
https://www.angus.org/Media/News/FullArticle?aiID=1114#

Proper Handling and Administration of Cattle Health Products
https://bookstore.ksre.ksu.edu/pubs/MF2603.pdf

Record Keeping

Cow Calf Record Book
https://bookstore.ksre.ksu.edu/pubs/MF185.pdf

High Risk, High Value Health

Show Cattle Fundamentals

Bryan M Weaver, DVM
Clinical Assistant Professor, Livestock Services
Kansas State University Veterinary Health Center

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Disclaimer

- The material in this presentation is only for general information and should not be substituted in the place of medical advice from your primary veterinary medical provider with appropriately established Veterinary-Client-Patient-Relationship.
- Any products shown in this presentation are used purely as an example, and no endorsement is meant or implied by their inclusion.

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What are high risk calves?

- Usually applied to calves leaving the cow-calf segment of the industry
  - Weaning status
  - Nutritional status
  - Weight
  - Age
  - Reproductive status
  - Immunologically naïve
  - Long hauls
  - Co-mingling of cattle from various sources

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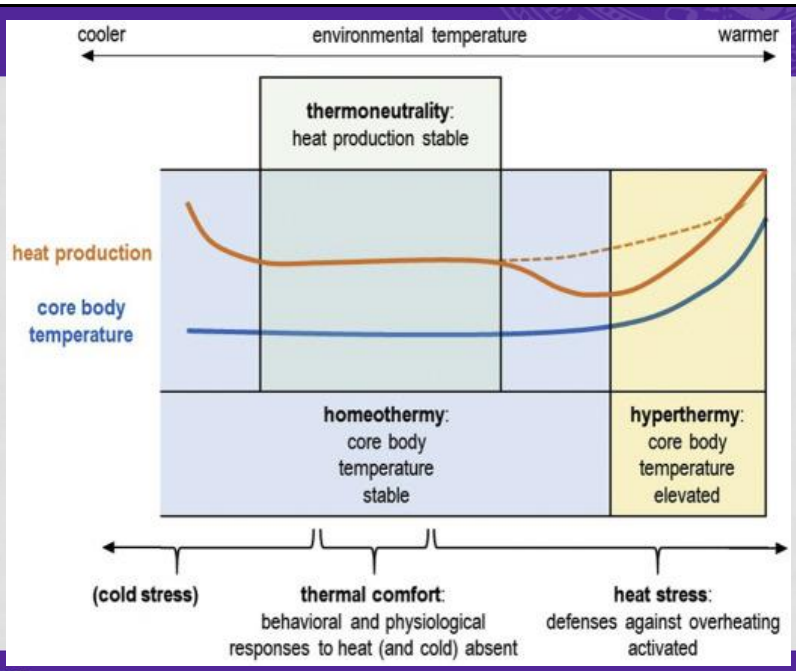

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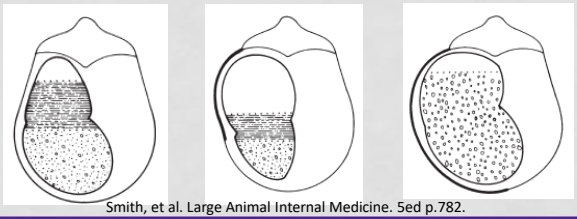
Vet Clinics of North America, Food Animal. 2019

Common disease conditi

- Bloat
  - Free gas vs frothy
  - Classic abdominal distention
  - MEDICAL EMERGENCY!!!
    - Respiratory distress



Smith, et al. Large Animal Internal Medicine. 5ed p.782.

Common disease conditions

- "Bloat"
  - Numerous reasons for abdominal enlargement
  - Rumen fill is usually main source of distention
  - Other parts of the GI may be root cause

Common disease conditions

- Pneumonia
  - Bovine respiratory disease (BRD)
  - "Shipping Fever"
  - Interstitial pneumonia (AIP)
  - Acute respiratory distress syndrome (ARDS)
    - Viral
    - Bacterial
    - Allergic
    - Intoxication

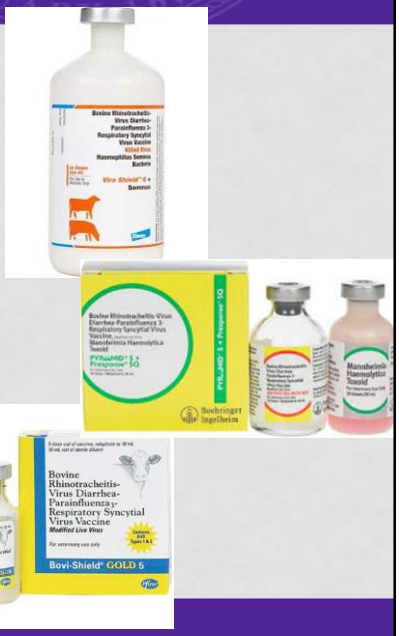
Vaccine protocols

- Clostridial
  - C. chauvoei – "Blackleg"
  - C. septicum – "Malignant edema"
  - C. novyi – "Bighead" "Infectious Necrotic Hepatitis"
  - C. perfringens C & D – "Enterotoxemia"
  - C. sordellii
  - C. tetani – "Tetanus"
  - C. haemolyticum – "Redwater"

Vaccine protocols

- Respiratory
  - BRD – Bovine Respiratory Disease
    - IBR – Infectious Bovine Rhinotracheitis – BHV1
    - BRSV – Bovine Respiratory Syncytial Virus
    - BVDV – Bovine Viral Diarrhea Virus, Types 1 & 2
    - PI3 – Parainfluenza 3

    - Mannheimia (Pasteurella) haemolytica
    - Pasteurella multocida
    - Histophilus somni
    - Mycoplasma bovis



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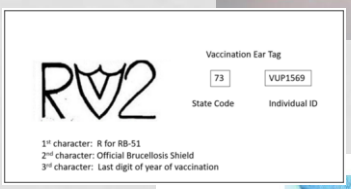
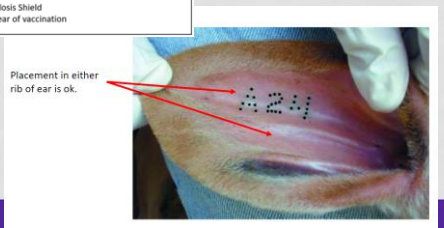
Vaccine protocols

- Reproductive
  - Brucella abortus – “Bang’s”
  - Leptospira
  - Campylobacter fetus – “Vibrio”





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Vaccine protocols

- Other vaccines
  - Moraxella bovis – IBK "Pinkeye"
  - A. marginale – "Anaplasmosis"
  - B. anthracis – "Anthrax"
  - F. necrophorum – "Foot rot"
  - Fibropapillomas – "Warts"
  - Rabies

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Treatment protocols

- What are we treating?
  - Infectious?
  - What causative agent?
  - What body system(s) are affected?
  - How severe/chronic are clinical signs?
  - How long should treatment last?
  - When should we see improvement, or change our therapeutic plan?
  - What are long term implications of disease?

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Antibiotic selection

- Penicillin G
- Oxytetracycline (LA 200/300)
- Sulfas (Sustain bolus)
- Ceftiofur (Excede, Excenel, Naxcel)
- Florfenicol (Nuflor, Resflor)
- Gamithromycin (Zactran)
- Tilmicosin (Micotil)
- Tulathromycin (Draxxin)
- Enrofloxacin (Baytril)

- Nitrofurazone
- Chloramphenicol
- Vancomycin
- Metronidazole

- Gentamicin
- Amikacin

- Medicated Feeds (VFDs)

Anti-inflammatory selection

- Flunixin meglumine (Banamine)
- Meloxicam

- Dexamethasone

- Side effects:
  - Abomasal ulcers
  - Kidney failure
  - Liver dysfunction

Treatment protocols

- Veterinary-Client-Patient-Relationship
- Written plans:
  - Indication
  - Dose
  - Route
  - Frequency
  - Response to treatment
- Extra-Label Drug Use
  - The use of an approved drug in a manner that is not in accordance with the approved labeling, but meets the conditions set forth by AMDUCA.

Residue avoidance

- Withdrawal time: the period of time from when a drug is administered to when the drug concentration falls below the *tolerance* in edible tissues/products.
  - i.e.: the amount of time after the last dose of a drug until an animal can be harvested for human consumption
- Tolerance: legally allowed concentration of a drug residue in edible tissues/products
  - Determined based on acceptable daily intake (ADI) that would result in no adverse affects over a human lifetime

Residue avoidance

- "Zero" tolerance
  - Some drugs do not have a safe level for human consumption
  - Therefore, any *detectable* level of drug residue is illegal
  - Zero is getting smaller all the time
- Drug testing at shows is often "zero tolerance" for a wide range of illicit substances and medications alike.

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Biosecurity

- Reducing an animal's exposure to various infectious agents that cause disease
  - Quarantining new arrivals/additions
  - Limiting co-mingling of animals
- Can be extremely difficult for show animals
  - Only use your own feed pans and water buckets, grooming supplies, etc.
  - Distance your animals from others when possible
  - Clean and disinfect animals, equipment, trailer after returning from show
  - Isolate animals after returning from show

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Questions?

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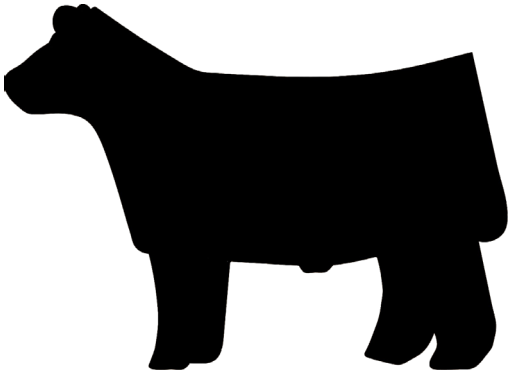
Kansas Department of Agriculture

BIOSECURITY
Keeping your cattle healthy

Biosecurity is another way of saying "infectious disease control." Biosecurity is a combination of management practices designed to prevent the introduction and transmission of diseases into and throughout a herd. Infectious diseases can be transmitted by animals, people, equipment and vehicles. Livestock exhibitions are events where animals have an increased risk of getting infectious diseases due to the commingling of animals from different sources. Taking some simple precautions can help reduce that risk and keep your animals healthy. Below are some biosecurity recommendations for ensuring the health of your show cattle.



Before the Show

- Read all guidelines for each show to be sure your animals meet all entry and exhibition requirements.
- Work with your veterinarian to ensure your cattle are up to date on vaccinations.
- Evaluate your cattle's health prior to going to the show. Never take an unhealthy animal to a show. Signs of illness can include decreased appetite, fever, diarrhea, nasal discharge, coughing and blisters around the mouth, nose and/or hooves. If you see any of these signs, please contact your veterinarian.
- Take only clean and disinfected equipment to the show to prevent any potential disease transfer from your cattle to others.

During the Show

- Monitor your cattle daily for signs of illness. If you suspect your animal is sick, notify a show official right away.
- Avoid personal contact with animals other than your own.
- Do not share feed, feed/water tubs, grooming supplies or other equipment with other exhibitors at the show.
- Keep your area and equipment clean of manure contamination.
- Wash your hands frequently with warm soapy water after contact with animals or equipment.

After the Show

- Isolate the cattle you took to the show from the rest of your herd when you return home.
- The show cattle should be as far from the other animals as possible, but they need to be at least far enough away to prevent nose-to-nose contact. Your veterinarian can help you establish a good location.
- Modify your chore routine to care for your show cattle last each day. Do not share equipment between show cattle and any other animals at home.
- Monitor your show cattle daily for signs of illness, including those signs listed in the "Before the Show" section. Contact your veterinarian if any animal shows signs of illness.
- Clean and disinfect all equipment, shoes, vehicles and trailers you took to the show. Allow them to dry completely.
- Talk to your veterinarian to determine the best biosecurity practices for your cattle.

Kansas Department of Agriculture | 1320 Research Park Drive | Manhattan KS 66502 | 785-564-6601 | agriculture.ks.gov/animalhealth

Beef Cattle Showmanship

Dr. Scott Schaake
Kansas State University

Beef cattle, like other species require handling and training that starts at home. In order for you to have an animal that works properly in the show ring, you must put in many hours of hard work in order to maximize your animal's strong points and minimize the weaker points. Halter breaking, feeding, washing, clipping, and practicing showing are all things that should be completed at home, prior to going to any show.

A good showman is clean and well presented, aware of the judge and your surroundings, courteous at all times, pays attention, and knows how to properly set up your animal to show it's best physical attributes.

Showman's Attire

A showman should be neat and clean just as your animal should be well groomed. It is recommended that you wear appropriate clothing consisting of a tucked-in collared shirt, leather boots, jeans and a belt. Fancy and flashy clothing are not needed to look professional and can cause a distraction. A baseball cap has no place in the show ring.

In addition to being properly dressed, you should have the necessary equipment. A comb in your back pocket with the teeth turned to the inside as well as a show stick and show halter are necessary.

Show Time

- Check the show schedule and be ready when your class is called
- Lead the calf from the left side
- Your show stick should be in your left hand
- Don't coil the lead strap up around your hand or let drag
- Be aware of the judge and ring stewards
- Use the entire space provided
- Do not crowd other livestock

Setting Up Your Animal:

Always allow space between your calf and the calf next to you. Generally, you will set your animal up in a rear profile position after you walk into the ring. In order to set up in rear profile correctly, all feet should be set at all four corners under the animal. You will then lead your animal around the ring so the judge can view structural correctness and the side profile of your animal. A correct side profile position consists of the front feet set even while the back feet are staggered with the judge's side back foot being further back. Remember to stay calm while setting up and scratching your animal. Quick, rough movements show nervousness on your part and can make your animal uneasy.

Good sportsmanship is an important part of showmanship. Remember that you are always being watched and often judged by your actions. Work hard, practice before the show, always try to do better next time, gain from your mistakes and above all, always have fun!

Reproduction in Beef Cattle

Kansas Junior Beef Producer Day
Kansas State University
March 5, 2022

Dr. David Grieger
Dept. Animal Sciences & Industry

Kansas State University
Animal Sciences and Industry

POP QUIZ rules for college:
You must use <u>mental</u> and <u>physical</u> skills to answer a question.

1. Which of these animals does better on grass?

2. WHY?

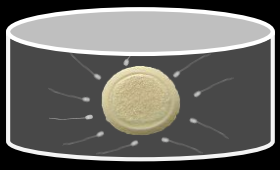
3. What are the different ways to make a calf?

1. Natural Mating

2. Artificial Insemination

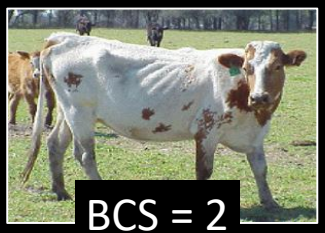
3. Embryo Transfer

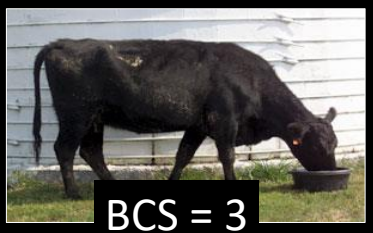
4. IVF (In vitro fertilization)

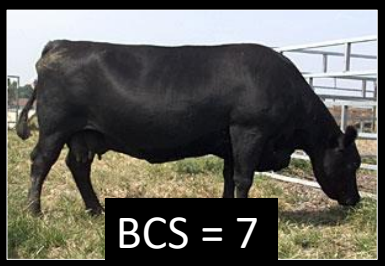


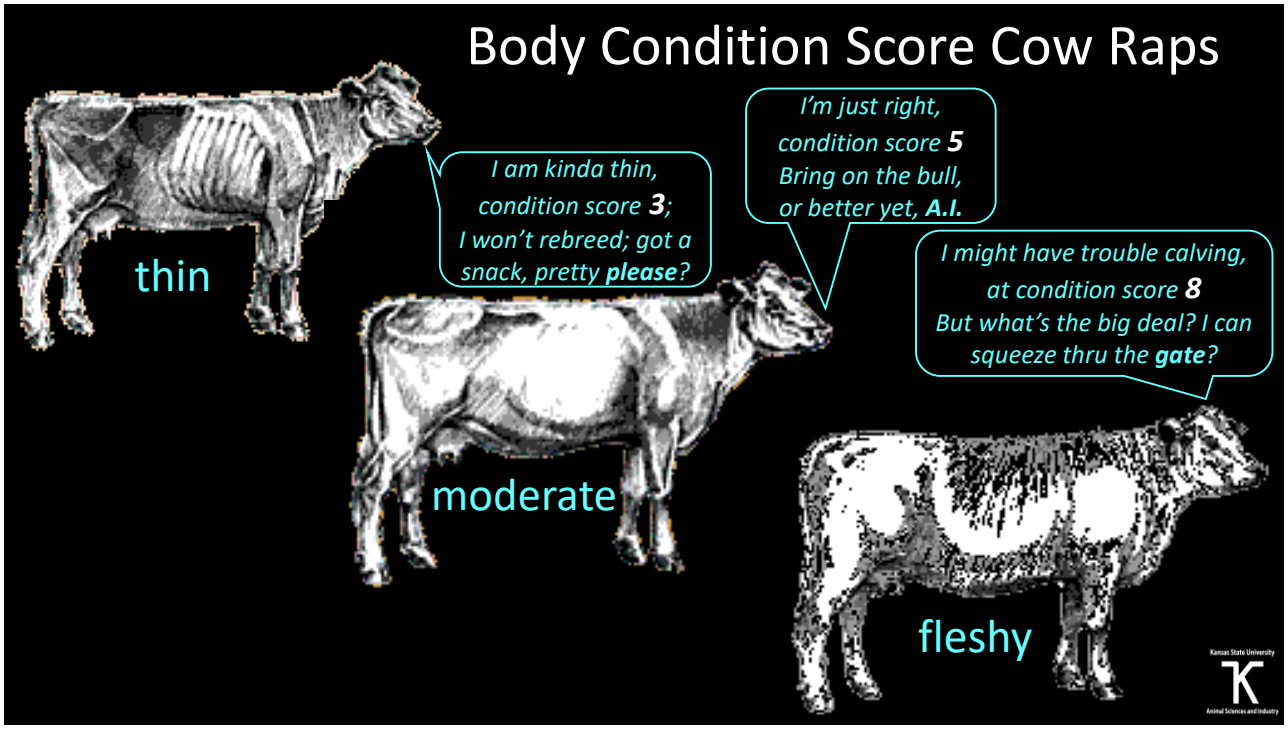
4. What is the abbreviation of BODY CONDITION SCORE?

5. What is the range of BCSs?









6. What is the length of a cow's estrous cycle?

21 DAYS

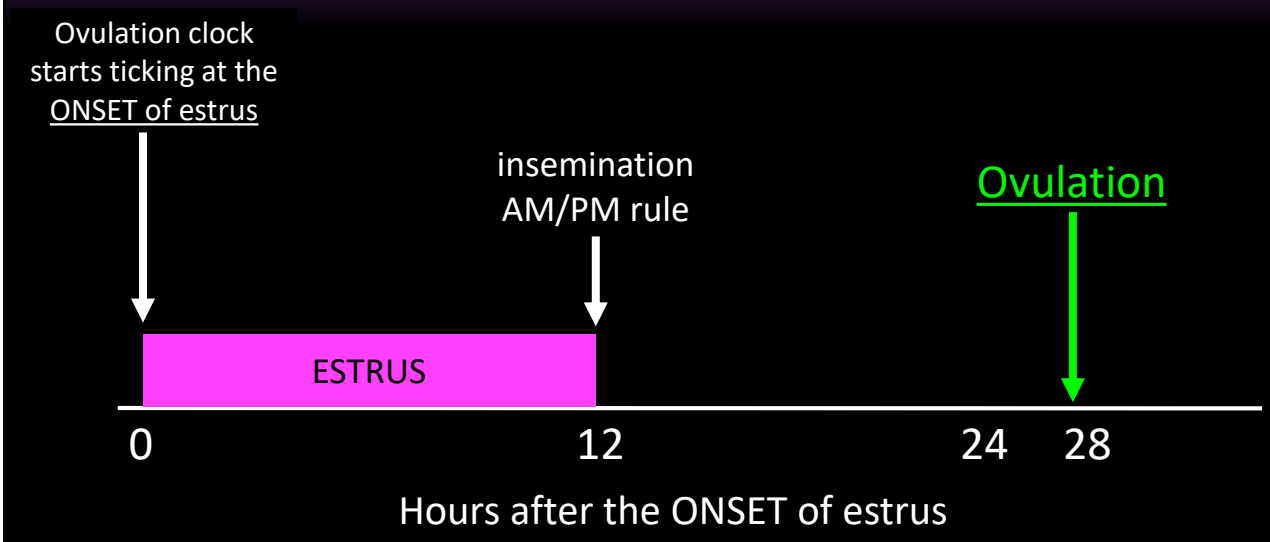
7. What is the length of a cow's estrus?

12 HOURS

Stevenson, S. K. Johnson, and G. A. Milliken ...Prof Anim. Sci 19:124-134, 2003

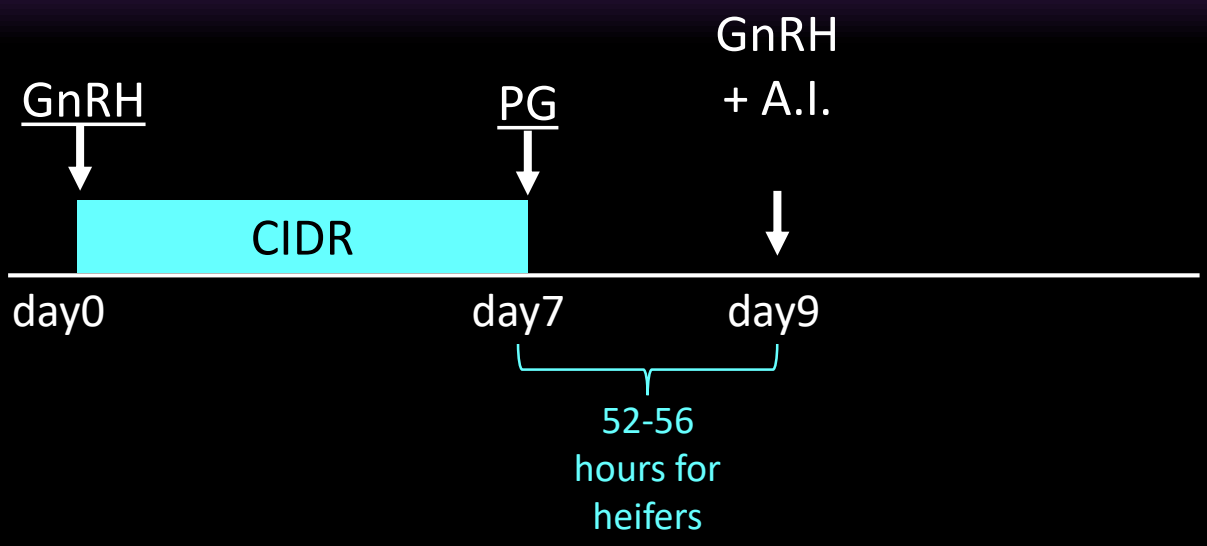
Kansas State University
Animal Sciences and Industry

Relationship of estrus, timing of A.I. and ovulation



Estrous Detection

Fixed-Time AI (No estrous detection)



Is your heifer pregnant? → 8. How can you tell?

1. Rectal Palpation
2. Ultrasonography
3. Blood test

Is your heifer pregnant?

YES → Why? → 2nd Preg Check?

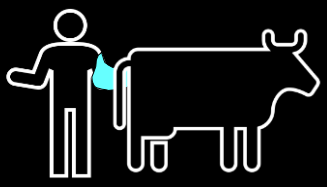
NO → Why not? → Rebreed?

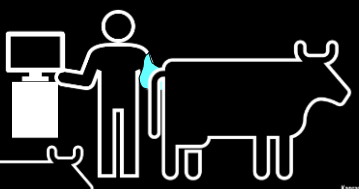
How can you tell?

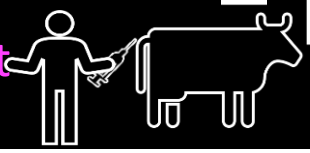
Rectal Palpation

Ultrasonography

Blood test







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9. What supplies do you need to A.I. or preg-check?

+

+

+

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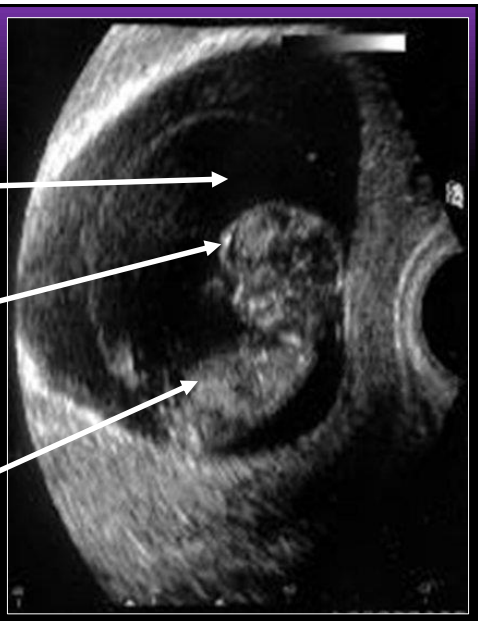
Ultrasonography

Black on monitor = Not dense (fluid)

White on monitor = Dense (bone)

Gray on monitor = Semi-dense (soft tissue)



State Livestock Nominations

Lexie Hayes
Youth Livestock Program Coordinator
Kansas State University
March 2022

K-STATE Research and Extension

Process Overview

- Must formally nominate **market** or **commercial** animals for state shows:
  - ✓ Kansas State Fair (Grand Drive)
  - ✓ Kansas Junior Livestock Show (KJLS)
- Nominations make livestock projects ELIGIBLE
  - ✓ Multi-step process
  - ✓ Complete nomination does NOT constitute show entry
  - ✓ Families must officially enter the shows in which they would like to exhibit
- 2022 Nomination Information and Materials available via:
  - ✓ K-State Youth Livestock Program website

www.youthlivestock.ksu.edu → Nomination Information

OR

http://bit.ly/ksunominations

K-STATE Research and Extension

ONLINE SYSTEM

- Transitioning to an online system for 2022
  1) Purchase official DNA envelopes through ShoWorks to pay nomination fee
  2) Submit information for each animal and exhibitor(s) online via ShoWorks
  3) Mail completed and signed DNA envelopes, with copy of submission receipt
  4) Extension Agents & FFA Advisors approve nominations online
- Required to Upload Documents
  1) 2022 Declaration Form
     - ✓ Available on KSU YLP website and instructions on ShoWorks nomination homepage
     - ✓ Extension Agent & FFA Advisor signature has been removed
     - ✓ Housing question build into system
     - ✓ One form should represent entire family; upload same form for all children within family
  2) YQCA Certificate
     - ✓ Encourage early certification
     - ✓ Certificate must be valid through 10/2/2022
- Families will need to plan ahead and have all documents handy!

K-STATE Research and Extension

DEADLINES

- Order DNA Envelopes
  - ✓ One (1) week prior to nomination deadline
    - ➢ April 24 - Market Beef
    - ➢ June 8 - Small Livestock
- Submit Information Online
  - ✓ Prior to the nomination deadline - the sooner the better
    - ➢ May 1 - Market Beef
    - ➢ June 15 - Small Livestock & Commercial Heifers
- Postmark DNA Envelopes (completed & signed)
  - ✓ May 1
    - ➢ Market Steers
    - ➢ Market Heifers
  - ✓ June 15
    - ➢ Market Hogs
    - ➢ Commercial Gilts
    - ➢ Market Lambs
    - ➢ Commercial Ewes
    - ➢ Market Meat Goats
    - ➢ Breeding Does
    - ➢ Commercial Heifers

K-STATE Research and Extension

NOMINATION PROCESS

Step 1: Animals eligible for KJLS or KSF will need a Kansas 4-H EID ear tag placed in the ear of the animal **BY THE AGENT**

- ✓ Let local Extension Office know you plan to state nominate animals

Step 2: Families will submit nomination information online

- ✓ Create ShoWorks account for each exhibitor (Quick Group for families)
- ✓ Submit nomination entry for each animal, under each exhibitor within the family
- ✓ Upload completed 2022 Declaration Form & YQCA certificate
- ✓ Still need KSU Family Name and Nomination #

Step 3: Purchase official DNA envelopes through ShoWorks

- ✓ Order by deadline (April 24 – Market Beef; June 8 – Small Livestock & Comm. Heifers)
- ✓ Exhibitors will pull a DNA sample from the animal and place it in an official DNA envelope (DO NOT CUT THE HAIR)
- ✓ Instructions on pulling DNA are on the youth livestock website
- ✓ Instructional videos on youth livestock website (under DNA Collection Instructions)

K-STATE Research and Extension

NOMINATION PROCESS

Step 4: Exhibitors will mail their completed DNA envelopes and a copy of their nomination submission receipt to K-State by the postmark deadline.

- ✓ May 1 – Market Beef; June 15 – Small Livestock & Commercial Heifers
- ✓ Certified Mail is *HIGHLY* suggested ($4.00-$8.00 for peace of mind)

Step 5: Extension Agents & FFA Advisors will approve nominations online.

- ✓ 4-H members – Extension Agent; FFA members – FFA Advisor
- ✓ Approval has same implications as wet signature used previously on paperwork

Step 6: K-State will process the nominations and post weekly updates online regarding complete/incomplete nominations.

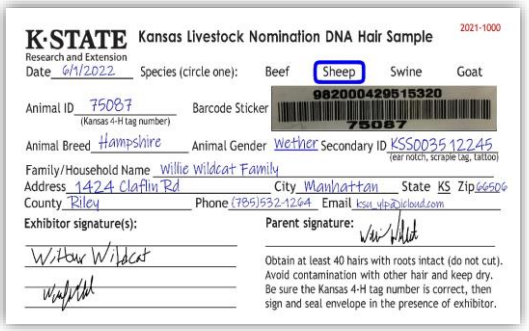
- ✓ Confirmation letter issued to family upon processing
- ✓ Exhibitor/family opportunity to verify information received by K-State
- ✓ Specific window of time to correct/report mistakes (email adhayes@ksu.edu)

K-STATE Research and Extension

Materials to Mail

- DNA Envelopes
- Online Submission Receipt (ShoWorks)

DNA Envelopes



K-STATE Research and Extension Kansas Livestock Nomination DNA Hair Sample 2021-1000

Date 6/1/2022 Species (circle one): Beef **Sheep** Swine Goat

Animal ID 75087 (Kansas 4-H tag number) Barcode Sticker 982000429515320 75087

Animal Breed Hampshire Animal Gender Wether Secondary ID KSS00351 2245 (ear notch, scrapie tag, tattoo)

Family/Household Name Willie Wildcat Family

Address 1424 Claflin Rd City Manhattan State KS Zip 66506

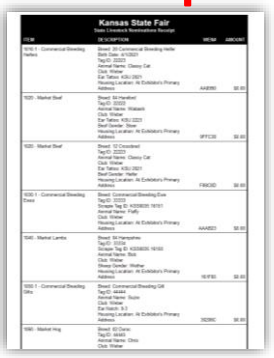
County Riley Phone (785)532-1264 Email ksu_vip2@icloud.com

Exhibitor signature(s): Willie Wildcat

Parent signature:

Obtain at least 40 hairs with roots intact (do not cut). Avoid contamination with other hair and keep dry. Be sure the Kansas 4-H tag number is correct, then sign and seal envelope in the presence of exhibitor.

Receipt



Kansas State Fair

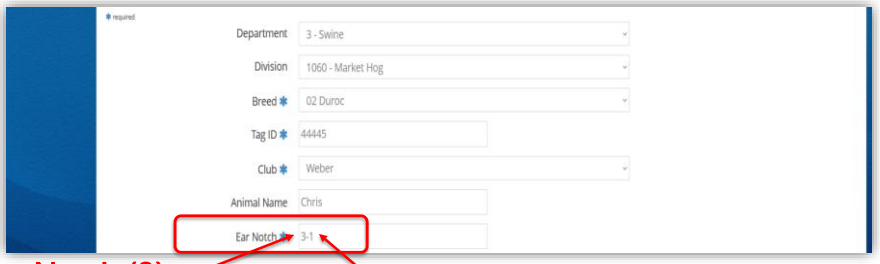
Secondary ID - Tattoos

- Registered steers and heifers
  - ✓ Tattoo must match registration papers/breeder certificate
  - ✓ Required for breed classes
  - ✓ Optional for nominated cattle
    - ➢ Required for shows
    - ➢ Encourage families to double check

K-STATE Research and Extension

SECONDARY ID – EAR NOTCHES

- Ear notches are required for all swine nominations
  - ✓ Submit ear notch number
- Resources available:
  - ✓ Rookie Guide
  - ✓ KSU Youth Livestock Program website
  - ✓ K-State Show Pig Guide



Litter Notch (3)

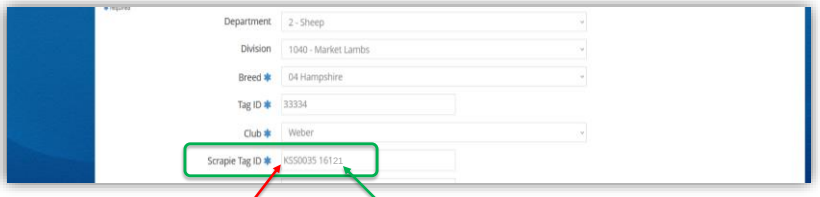
Individual Pig Notch (1)

K-STATE Research and Extension

SECONDARY ID – SCRAPIE TAG

- FULL scrapie tag #s are required for all sheep & meat goat nominations
- Submit Flock/Premise ID AND Individual animal #
  - ✓ Example: KSS0035 16121
  - ✓ Farm/custom tags – look on back of tag for Flock ID

- Resources available:
  - ✓ Rookie Guide
  - ✓ KSU Youth Livestock Program website

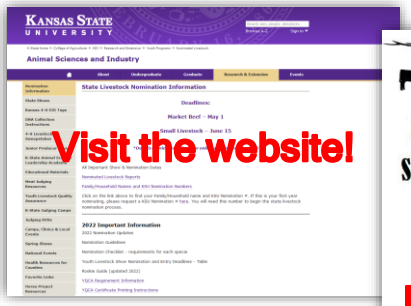


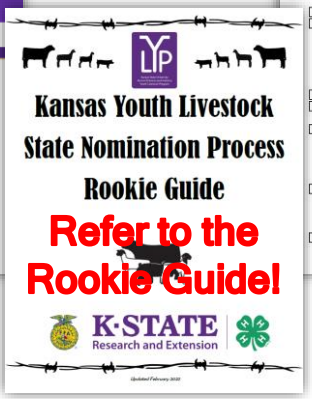
Flock ID (KSS0035)

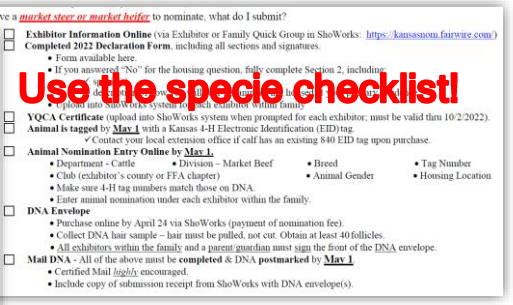
Individual Animal # (16121)

K-STATE Research and Extension

Tips & Resources







Incomplete Fee:

$20 one time/ year incompletion fee if nomination needs to be returned for any reason.

K-State Research and Extension

2022 Updates

- New Online Nomination System
- New DNA Envelopes
  - ✓ Purchased directly through ShoWorks
  - ✓ Payment of nomination fee tied to envelope
  - ✓ Cost Increase - $12/animal
- ShoWorks Passport App
  - ✓ Manage exhibitors and entries, for multiple shows
  - ✓ Enable notifications
- Declaration Form
  - ✓ Updated
- Swine Breed Divisions Added
  - ✓ Berkshire, Poland, Spot separated from Dark AOB
- "Worksheets" Available
  - ✓ Resource to guide in organizing animal data

K-State Research and Extension

Continuing requirements

- YQCA certification required for all exhibitors
  - ✓ Complete training early!
  - ✓ Annual certification; must be valid through 10/2/2022 to be accepted
  - ✓ Includes 7-year-olds
  - ✓ Have certificate downloaded and handy before beginning nominations

K-STATE Research and Extension

Show Entry

- Reminder: A livestock nomination **is NOT an entry** for:
  - ✓ Kansas State Fair Grand Drive
  - ✓ Kansas Junior Livestock Show (KJLS)
- K-State processes nominations, but KSF & KJLS manage their own shows and entries.
  - ✓ 3 SEPARATE processes
  - ✓ Nomination only declares ownership and makes animals eligible
    - ➢ Account created for nominations should expedite show entry
- Exhibitors must submit an entry online through SHOWORKS for each show, once they have successfully completed nomination process.
  - ✓ Get entry information from:
    - ➢ Extension Office
    - ➢ Show website(s)
    - ➢ Social Media
    - ➢ Nomination Confirmation Letter

K-STATE Research and Extension

Kansas State Fair

- Date: September 9-18, 2022
- Grand Drive: September 9-11, 2022
- Entries Due: July 15
- Show located in Hutchinson, KS
- www.kansasstatefair.com

Kansas Junior Livestock Show (KJLS)

- Date: September 30 – October 2, 2022
- Entries Due: August 15
- Show located in Hutchinson, KS
- http://www.kjls.net/

K-STATE Research and Extension

Thank You!

Lexie Hayes

adhayes@ksu.edu

(785)532-1264

www.youthlivestock.ksu.edu

Kansas State Youth Livestock Program

K-STATE Research and Extension

ANIMAL ID

22 Tiburon Drive, Suite 100 ■ Austin, Texas 78738 ■ Phone 512.261.0779 ■ Fax 512.261.0104 ■ www.weDNAid.com

Cattle Hair Sample Collection Instructions

Check the ear tag number of the animal, and record it on the hair sample envelope.

We strongly recommend that you collect tail switch hair. If this is not an option, then collect hair from the poll, neck or tail head. Clean the sample area with a paper towel to remove excess dirt if necessary.

Use bent, long or needle nose pliers to collect the sample.

Grasp hair close to skin with pliers and pull directly away from the skin. Take at least two pulls. Make sure that the sample has at least 30 hair roots. If tail switch is not available, then take at least 5 pulls from the poll, neck or tail head.

Inspect the hair sample to ensure at least 30 hair follicles.

Do NOT cut the hair from the animal. The hair MUST CONTAIN ROOTS for DNA testing. Avoid touching the roots and make sure the hair is dry.

Place hairs in the sample envelope and seal the envelope. Do not put hairs in a plastic bag.

Fill out the remaining information lines on the envelope, and have the witnesses sign.

REMEMBER: Cleanse hands and pliers between animal samples to ensure that hairs from different animals are not mixed.

Cattle Hair Sample Checklist

- ✓ Insert ear tag number on the envelope
- ✓ Collect hair from tail switch
- ✓ Obtain at least 30 hairs with follicles
- ✓ Take at least 2 pulls
- ✓ Inspect for follicles–do NOT touch follicles
- ✓ Obtain exhibitor signature & seal envelope
- ✓ Clean pliers and hands between animals

Instructional videos available on the DNA page of the KSU Youth Livestock website (www.youthlivestock.ksu.edu).
If viewing this resource book electronically, click here: DNA Videos.

The state livestock nomination process is open to Kansas 4-H and FFA members who would like to participate in the Kansas State Fair Grand Drive and/or Kansas Junior Livestock Show (KJLS).

All market animals and commercial females must be state nominated to be eligible for the Kansas State Fair Grand Drive and/or KJLS. This includes:

(1) Ordering official DNA envelopes in advance and paying the nomination fee through the ShoWorks system.

(2) Submitting identifying data on each animal through this ShoWorks online system, as well as the required information for each exhibitor within the family.

(3) Mailing an official DNA envelope for each nominated animal, which is complete, sealed, and signed by all exhibitors within the family, plus a parent/legal guardian.

*All steps must be complete for the exhibitors and animals to be ELIGIBLE for the Kansas State Fair Grand Drive and/or KJLS. Submissions must also be approved by the appropriate extension agent and/or ag teacher to be accepted and eligible for exhibition.

**A copy of the receipt for all online nomination submissions must be mailed with the DNA envelopes via certified mail to the KSU Youth Livestock Program, being postmarked by the appropriate date. Late materials will not be accepted and all animals submitted after the postmark deadline will be ineligible.

KSU Youth Livestock Program Mailing Address:
State 4-H/FFA Shows
Kansas State University
214 Weber Hall
1424 Claflin Road
Manhattan, KS 66506

Postmark Deadlines:
Market Beef – May 1
Commercial Heifers – June 15
Swine – June 15
Sheep – June 15
Meat Goats – June 15

SAVE CART and SAVE OFTEN! Saving your cart is the only way to keep user data and allows you to return later to complete your nomination submission.

Families are encouraged to use the step-by-step Specie Worksheets and Rookie Guide on the KSU Youth Livestock Program website to help guide them through the process. These documents include tips and hints for correct and complete nominations.

Guidelines:
(A) ALL nomination data must be submitted online by 5:00pm on the appropriate date listed above for each specie.

(B) DNA envelope orders will close one (1) week prior to the nomination deadline for each specie:

Market Beef - April 24
Small Livestock & Commercial Heifers - June 8

(C) Families will need to provide their official KSU Nomination # (assigned 5-digit number) and Family/Household Name in the system. Returning families may locate this number via the Family/Household Names and KSU Number List posted on the youth livestock website, or obtain it by contacting their local extension office.

Families who are nominating for the first time need to request a KSU Nomination #, by using this link: KSU Nomination # Request

These requests will be completed in the order in which they are received and may take 1-3 business days to be approved. New families will receive their official number via the email address provided in the request link (Qualtrics).

(D) All exhibitors are required to be YQCA certified prior to nomination. Certification must be valid through October 2, 2022 to be accepted. Users will upload a copy of the certificate for each exhibitor before the submissions will be accepted. Youth should complete the training as early as possible to have their 2021-2022 certificate available and ready to upload before beginning the process!

(E) Submitting this information is for state livestock nomination purposes only to officially nominate animals and make them eligible for the Kansas State Fair Grand Drive and/or KJLS.

(F) A complete state livestock nomination does **NOT** constitute show entry. Official show entries must be made separately, directly though each individual show, in order to be able to exhibit. Rules and entry details may be found on each show's respective website:

Kansas State Fair Grand Drive
KJLS

(G) A family nomination system is used in Kansas. All exhibitors within the family must have each animal submitted under their name online, as well as sign all of the DNA envelopes for their family.

(H) There is a $20 fee for any incomplete nomination received. This includes online submission data, uploaded documents, and DNA envelope(s). All nomination submissions are final. No refunds.

(I) Declaration, Housing, & Care - Exhibitors of Kansas Youth Livestock Shows are responsible for the proper care of their animal(s) by following acceptable methods of good animal husbandry. Youth are also expected to provide the primary care and training for livestock projects for the duration of the project. Primary care is defined as the exhibitor making the decisions for and providing the care, handling, and training of their livestock project a majority of the time.

*Families will need to complete and upload the 2022 Declaration Form for the exhibitors within their family. This form-fillable PDF is available by clicking the link above. It must be signed by all exhibitors within the family and a parent/legal guardian. The same completed form, representing the entire family, should be uploaded for each exhibitor.

(J) If you created a new PASSPORT account last year, your account was saved. Just log into your PASSPORT account. However, nominations will be easier to complete using a computer, which is recommended. NEW ShoWorks Passport users can create an account and it will save all of your entries from year to year, as well as for other fairs and shows!

You may also turn on notifications for the PASSPORT app, which will allow us to send you messages and alerts to stay up-to-date on your state nominations as well as the state shows!

GRAND DRIVE & KJLS IMPORTANT DATES

April 24	Last Day to Order Beef DNA Envelopes
May 1	Market Beef Nominations Due
June 8	Last Day to Order Small Livestock DNA Envelopes
June 15	Small Livestock Nominations Due -Market Swine, Commercial Gilt -Market Lamb, Commercial Ewe -ALL Meat Goat (Market & Breeding)
	Commercial Heifer Nominations Due
	Registered Breeding Heifer Papers in Exhibitor's Name
	Registered Breeding Gilt Papers in Exhibitor's Name
July 1	Registered Breeding Ewe Papers in Exhibitor's Name
July 15	Kansas State Fair Grand Drive Entry Deadline
July 25	Kansas State Fair Grand Drive Late Entry Deadline
August 15	KJLS Entry Deadline
August 25	KJLS Late Entry Deadline
Sept. 9 - 11	Kansas State Fair Grand Drive
Sept. 30 - Oct. 2	KJLS

All market animals must be nominated to be eligible for either show.

All commercial breeding females must be nominated to be eligible for either show.

Registered breeding females must be in the exhibitor's name by the appropriate date to be eligible for either show.

All meat goats, including market, commercial does, and registered breeding does must be nominated to be eligible for either show.

http://bit.ly/ksunominations https://www.kansasstatefair.com/p/participate/grand-drive http://www.kjls.net/

2022 Youth Livestock Nomination and Entry Deadlines

Kansas State Fair Grand Drive (KSF) and Kansas Junior Livestock Show (KJLS)

AGE REQUIREMENTS: Kansas State Fair: Only Kansas 4-H & FFA members who were 9 years of age but not yet 19 years of age before January 1 of the current year are eligible to compete in this division. **KJLS**: All Kansas 4-H members that have reached the age of 7 before January 1st of the show year will be eligible to participate at the Kansas Junior Livestock Show.

Entry	Required Materials for Nomination	Cost to Nominate	Nomination Declaration*	Nomination Deadline	Show Entry Deadline	Registration Papers
Market Steers	KS 4-H EID tagged, Declaration Form*, Market Beef Online Nomination Entry*, Official DNA Envelope*, Gender, YQCA Certification, all completed & postmarked by May 1.	$12	Required every year	May 1	KSF – July 15 KJLS – August 15	Required for breed classes.
Market Heifers**	KS 4-H EID tagged, Declaration Form*, Market Beef Online Nomination Entry*, Official DNA Envelope*, YQCA Certification, all completed & postmarked by May 1.	$12	Required every year	May 1	KSF – July 15	N/A
Commercial (Crossbred) Heifers	KS 4-H EID tagged, Declaration Form*, Commercial Heifer Online Nomination Entry*, Official DNA Envelope*, YQCA Certification, all completed & postmarked by June 15.	$12	Required every year	June 15	KSF – July 15 KJLS – August 15	N/A
Registered Breeding Heifers	*None. YQCA certificate submitted at time of show entry.*	N/A	N/A	N/A	KSF – July 15 KJLS – August 15	In exhibitor's name by June 15.
Market Lambs	KS 4-H EID tagged, Declaration Form*, Market Lamb Online Nomination Entry*, Official DNA Envelope*, Full Scrapie Tag #, Gender, YQCA Certification, all completed & postmarked by June 15.	$12	Required every year	June 15	KSF – July 15 KJLS – August 15	N/A
Commercial Ewes (Wether Dams)	KS 4-H EID tagged, Declaration Form*, Commercial Ewe Online Nomination Entry*, Official DNA Envelope*, Full Scrapie Tag #, YQCA Certification, all completed & postmarked by June 15.	$12	Required every year	June 15	KSF – July 15 KJLS – August 15	N/A
Registered Breeding Ewes	*None. YQCA certificate submitted at time of show entry.*	N/A	N/A	N/A	KSF – July 15 KJLS – August 15	In exhibitor's name by July 1.
KSF Market Hogs/ KJLS Barrows***	KS 4-H EID tagged, Declaration Form*, Market Hog Online Nomination Entry*, Official DNA Envelope*, Ear Notches, Gender, YQCA Certification, all completed & postmarked by June 15.	$12	Required every year	June 15	KSF – July 15 KJLS – August 15	In exhibitor's name by June 15.
Purebred/Pedigreed Breeding Gilts	*None. YQCA certificate submitted at time of show entry.*	N/A	N/A	N/A	KSF – July 15 KJLS – August 15	In exhibitor's name by June 15.
Commercial Breeding Gilts	KS 4-H EID tagged, Declaration Form*, Commercial Gilt Online Nomination Entry*, Official DNA Envelope*, YQCA Certification, Ear Notches, all completed & postmarked by June 15.	$12	Required every year	June 15	KSF – July 15 KJLS – August 15	N/A
All Meat Goats****	KS 4-H EID tagged, Declaration Form*, Meat Goat Online Nomination Entry*, Official DNA Envelope*, Full Scrapie Tag #, Gender, YQCA Certification, all postmarked by June 15.	$12	Required every year	June 15	KSF –July 15 KJLS – August 15	N/A

* The 2022 Declaration Form is available at www.YouthLivestock.KSU.edu. Declaration Forms are uploaded at the time of nomination. Contact the local extension office to have animals tagged (for all species). **All exhibitors are required to be YPQA+ or YQCA certified.** Animal nomination entries are submitted online through ShoWorks. No paper forms accepted. Purchase official DNA envelopes through the online system at least a week prior to the nomination deadline.

** There is no market heifer show at KJLS.

*** For pedigreed market barrows, ear notches on registration papers must match the pig's ear notches to be able to show. Only steers, barrows, & wethers are eligible for the market division at KJLS.

**** Commercial doe show available at BOTH KSF & KJLS; ALL market and breeding meat goats must be nominated (no *registered* breeding doe show for either show).

*****Health papers are only required at KSF for animals originating outside of Kansas.**

There is a one-time/year $20.00 fee if any part of a nomination is incomplete or has to be returned; use the checklist.
Animal Nomination Entries must be submitted online for each exhibitor through ShoWorks: https://kansasnom.fairwire.com/. *No refunds.*

February 2022

YQCA
YOUTH FOR THE QUALITY CARE OF ANIMALS

REQUIREMENT!

FOR ALL KANSAS STATE FAIR GRAND DRIVE & KJLS EXHIBITORS

What is it?

Youth for the Quality Care of Animals (YQCA) is a national, multi-species youth livestock quality assurance program that covers food safety, animal well-being, and character development through age-appropriate educational curriculum.

Who needs to get certified?

Any youth 7 years of age and older who will be exhibiting a market or breeding animal in the Kansas State Fair Grand Drive or Kansas Junior Livestock Show (KJLS) is required to obtain certification. The requirement took effect for 7-year-olds exhibiting at KJLS beginning in 2021. They may receive certification through an instructor-led training. Those needing an online option should contact their local extension office. YQCA certification numbers will be submitted through the online nomination process for market animals, and at the time of entry for exhibitors who only have registered purebred breeding animals. All youth should complete the training by June 15, 2022.

How do youth get certified?

Annual certification is required. Youth may earn their certification in one of the following ways:

- Instructor-led training ($3/child)
- Online course ($12/child)
- Test-Out exam (12 & 15-year-olds only; online course only; cost varies)
- Valid Youth PQA + number in lieu of YQCA (current numbers will be honored until they expire)

Instructor-led sessions may be offered at the local level by certified instructors. Visit www.yqca.org for more details and to register for a class. All youth must pre-register, through the YQCA website and pay the appropriate fee, regardless of the type of training they select, in order to obtain a certification number. Families should use their 4HOnline credentials to log in, create a user account, and register for training.

Where do youth find their certification number?

After completing the course, a young person's certificate will be available to download and print through their YQCA user account. Families are responsible for logging into the site after completion of the class to view a child's number and obtain their certificate.

KSU Youth Livestock Program

Website:
www.youthlivestock.ksu.edu

Facebook:
Kansas State Youth Livestock Program
@ksuylp

Snapchat:
K-State Youth Livestock Program
@ksuylp

Twitter
KSU Youth Livestock Program
@ksuylp

Instagram
KSU Youth Livestock Program
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3/5/2022