














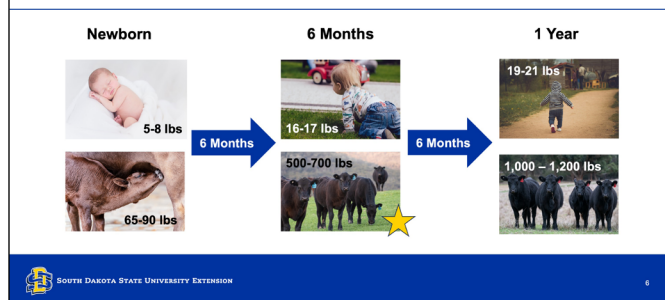


Slide	Notes
<div><div><div> SOUTH DAKOTA STATE UNIVERSITY EXTENSION</div><div></div></div><div><h1>Adopt-A-Cow: Beef</h1><div>Lesson 5 Life Cycle</div></div><div><small>SDSU Extension is an equal opportunity provider and employer in accordance with the nondiscrimination policies of South Dakota State University, the South Dakota Board of Regents and the United States Department of Agriculture. Learn more at sdstate.edu/eop. © 2020, South Dakota Board of Regents</small></div><div></div></div>	
<div><div><h2>Lesson 4 Review</h2><div><div>Solar Energy</div><div>Chemical Energy (sugar)</div><div>Chemical Energy (proteins, fats, vitamins, and minerals.)</div><div></div></div></div><div></div><div> SOUTH DAKOTA STATE UNIVERSITY EXTENSION</div><div>2</div></div>	<p><i>*This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis.*</i></p> <p>What do you recall about what we learned during our last lesson?</p> <p>In lesson 4, we learned about how solar energy from the sun is transferred.</p> <ul style="list-style-type: none"><i>(1) It is used by grass to grow creating sugars.</i><i>(2) Which can be broken down by the cow's special stomachs.</i><i>(3) Cows use the energy they obtain for their daily functions but also to produce muscle (meat) and milk.</i> <p>In today's lesson we will check in with our baby calf who is now about 6 months old. We will also learn about what will happen to our calf as he grows up.</p>
<div><div><h2>Adopted Calf Check-In</h2><div><div></div><div></div></div></div><div> SOUTH DAKOTA STATE UNIVERSITY EXTENSION</div><div>3</div></div>	<p>Keeping track of animals is very important in making sure they stay healthy. Just like your name and birthdate are used to identify you when you go to the doctor, ranchers need to identify their individual animals to make sure they can easily track their health among other things.</p>

Slide	Notes
	<p>Our calf is 6 months old, let's check in with him and his mom!</p> <p><i>After the video:</i> What new things did you notice about your calf?</p> <ul style="list-style-type: none"> – Size, amount of hair, with other cows and calves
	<p>Our calf is 6 months old, let's check in with him and his mom!</p> <p><i>After the video:</i> What new things did you notice about your calf?</p> <ul style="list-style-type: none"> – Size, amount of hair, with other cows and calves



What's Happening?



This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis.

Our baby calf isn't a baby anymore. Much like humans go through different stages of life: birth, growth, reproduction, and death; cattle do too.

At birth, a human baby is around 5-8 pounds, while a baby calf is between 65-90 lbs.

(1) Between 6 and 8 months old, a human baby has grown to be approximately 16-17 lbs. Do you have a guess at how big a baby calf is at this age?

(2) A six-month-old calf is between 500-700 lb.

(3) This is the stage that our baby calf is right now.

At six months, a human baby is just starting to learn to crawl and be mobile on his/her own. If you remember, our baby calf was walking within hours of its birth. At 6-8 months, human babies are just learning to eat solid foods, but baby calves start to nibble at solid foods like grass and hay within a few days of being born. At 6-8 months old, our baby calf is being weaned from his/her mom's milk. This means he/she will be taken off his/her mom's milk and be placed fully on a diet of grass/hay/grain.

What predictions do you have about the size of our baby calf at one year?

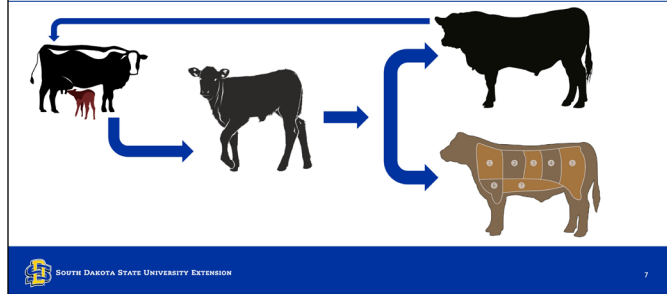
(4) In another 6 months our calf will nearly double in size and be around 1,100lbs at 12 months old. The average weight of a human toddler at 12 months is only 20lbs.

Not only are 1-year-old calves much larger in size than a 1-year-old human, they are very different developmentally. Think about any 1-year-old humans you may know. What are they like?

They are very dependent on larger people for survival. One year old calves on the other hand are independent from their mothers and are at an age where their life has some big changes happening.

Slide

What's Next? – Bull Calf



Notes

**This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis. **

(1) After the calf becomes a year old (a yearling), it's lifestyle will look differently based on whether it is a bull or heifer calf.

Can anyone tell me what a bull calf is? – *boy calf*

When bull calves are born ranchers need to decide if

(2) they are going to keep them to produce new babies, or
(3) if they are going to send them to the feedlot to build muscle for meat.

This decision is often based on their need for a bull, as well as the calf's characteristics and family background. This decision can be made as soon as the calf is born, or it can be made when the calf is weaned.

Some reasons that a calf may not be kept to reproduce are its body structure, coloring, or if it has a history of having a bad attitude.

If the rancher decides that his destination is the feedlot, he will be castrated. Castration, is similar to the process that is used to neuter cats and dogs. This will prevent the bull calf from being able to reproduce, but it will also assist his body in building muscle and fat.

Bull calves that have been castrated are called steers.

Bull calves that are kept for reproduction purposes are generally kept for 5-8 years and then retired and are eventually processed into meat.

Bull calves that are castrated for meat production are processed for meat around 1.5-2 years.

Bull calves are assessed as they grow to track health and disposition. If they stay healthy and continue to show good growth, they will be kept for producing new calves as they grow up. This video of the Werning bull sale is a glimpse of what some bull calves will experience.

Let's watch ...

Post Video:




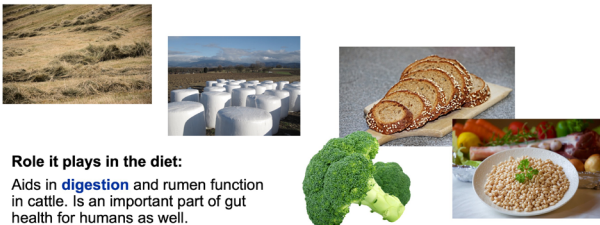
How many of you have been to a cattle auction before?

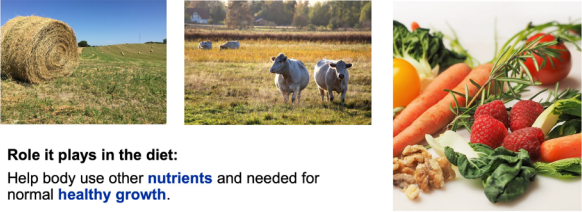



What were some things you noticed about the auction? Was there anything that surprised you?

What were some of the desired characteristics that Creighton and Craig noted? *Good feet and legs, heavy muscle, fast growth*



Slide	Notes
<div data-bbox="152 172 526 205" data-label="Section-Header"> <h3>What's Next? – Heifer Calf</h3> </div> <div data-bbox="107 226 764 516" data-label="Diagram"> <p>The diagram illustrates the lifecycle of a heifer calf. It begins with a cow and her calf. An arrow points to a heifer calf, which then leads to a cow. From the cow, an arrow points to a cow with a calf, completing the cycle. The diagram is set against a blue background with the South Dakota State University Extension logo.</p> </div>	<p><i>*This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis. *</i></p> <p>(1) We just talked about what would happen to a bull calf, what about a heifer?</p> <p>Can anyone tell me what a heifer calf is? – girl calf</p> <p>When heifer calves are born ranchers need to decide if</p> <p>(2) they are going to keep them to produce new babies (Breeding Cows), or</p> <p>(3) if they are going to send them to the feedlot to build muscle for meat.</p> <p>This decision is often based on several things:</p> <ul style="list-style-type: none"> • The calf's physical characteristics • The calf's behavior/temperament • How many cows you plan on retiring and need to replace. <p>Heifer calves that are kept for reproduction purposes are generally kept for 10-12 years and then retired to eventually be processed into meat. However, they may be retired sooner due to health or bad attitudes (disposition). Cows reach puberty around 1 year of age (11-14 months) and can begin having babies at around 2-2.5 years old. For human girls, puberty is generally reached around 8-13 years old.</p> <p>Heifer calves that are sent to the feedlot for meat production are processed for meat around 1.5-2 years.</p>
<div data-bbox="152 1094 365 1127" data-label="Section-Header"> <h3>Balanced Diets</h3> </div> <div data-bbox="107 1148 764 1438" data-label="Image"> <p>The image shows a variety of food items arranged in a collage. There are fruits like apples, bananas, and grapes; vegetables like carrots, broccoli, and bell peppers; meats like chicken, beef, and fish; dairy products like milk, cheese, and yogurt; and grains like bread, pasta, and rice. The background is white with a blue border at the bottom containing the South Dakota State University Extension logo.</p> </div>	<p>One of the biggest differences between the lifestyle of cattle chosen for breeding and cattle chosen for the feedlot is their diet. Both need a balanced diet, but they have different nutrient needs.</p> <p>Before we talk about the differences in their diet, let's see what is the same between a cow's diet and ours.</p> <p>What are some of the foods that we eat in a balanced diet?</p> <ul style="list-style-type: none"> • Fruits and Vegetables • Meats • Dairy Products (milk, cheese, etc.) • Grains (breads, pasta, rice, etc.) <p>These foods all contain nutrients that help keep us healthy:</p> <ul style="list-style-type: none"> • Proteins • Fat • Carbohydrates • Vitamins & Minerals <p>Cattle also need these nutrients</p>

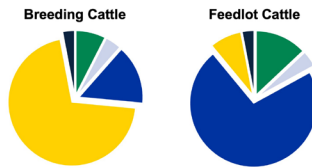
Slide	Notes
<h3>Protein</h3>  <p>Role it plays in the diet: Provides structural material to be used in muscle growth, repair, and maintenance. Sometimes used for energy.</p> <p><small>SOUTH DAKOTA STATE UNIVERSITY EXTENSION 11</small></p>	<p><i>*This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis.*</i></p> <p>Proteins provide slow release, long-term energy, which is used for muscle growth.</p> <ol style="list-style-type: none"> (1) Cow diets include alfalfa, soybean meal, and dried distillers' grains (2) Human diets include meat, fish, poultry, beans
<h3>Fats and Oils</h3>  <p>Role it plays in the diet: Some fat is used for energy and to absorb vitamins needed for health.</p> <p><small>SOUTH DAKOTA STATE UNIVERSITY EXTENSION 12</small></p>	<p><i>*This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis.*</i></p> <p>Fat Provides supplemented nutrients to the cow to meet requirements to keep them healthy. Your body needs some fat for energy to absorb vitamins to protect heart and brain health. There is good fat (HDL) and bad fat (LDL)</p> <ol style="list-style-type: none"> (1) Cow diets include dried distillers' grains and soybean meal (2) Human diets include peanut butter, avocados, and nuts
<h3>Carbohydrate (Starch/Sugar)</h3>  <p>Role it plays in the diet: Starch and sugars that are used as the main source of energy.</p> <p><small>SOUTH DAKOTA STATE UNIVERSITY EXTENSION 13</small></p>	<p><i>*This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis.*</i></p> <p>Carbohydrates in the form of starch and sugars are digested to produce energy.</p> <p>Comes in three forms: Starch, Sugar and Fiber:</p> <ul style="list-style-type: none"> • Starch and sugar provide calories(energy) for the body • Fiber helps your body eliminate wasteproducts <ol style="list-style-type: none"> (1) Cow diets include corn silage and cracked corn to meet these needs (2) Human diets include bread and pasta, some fruits and vegetables, milk, and yogurt
<h3>Carbohydrate (Fiber)</h3>  <p>Role it plays in the diet: Aids in digestion and rumen function in cattle. Is an important part of gut health for humans as well.</p> <p><small>SOUTH DAKOTA STATE UNIVERSITY EXTENSION 14</small></p>	<p><i>*This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis.*</i></p> <p>Carbohydrates in the form of fiber help your body eliminate waste products</p> <p>Fiber aids in digestion and rumen function in cattle. Is an important part of gut health for humans as well.</p> <ol style="list-style-type: none"> (1) Cow diets include corn silage, straw, and hay to meet fiber needs (2) Human diets include grains, fruits, vegetables

Slide	Notes
<h3 data-bbox="159 176 415 210">Vitamins/Minerals</h3> <div data-bbox="159 243 737 453">  <p data-bbox="164 390 477 447">Role it plays in the diet: Help body use other nutrients and needed for normal healthy growth.</p> </div> <div data-bbox="121 480 331 506">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </div> <div data-bbox="734 493 743 504">15</div>	<p data-bbox="786 142 1495 233"><i>*This slide contains animations during slide show mode. These animations/mouse clicks are noted by a number in italicized parenthesis.*</i></p> <p data-bbox="786 262 1463 352">Vitamins help our body use other nutrients (protein, carbohydrates and fats) and minerals are needed for normal growth and development to ensure healthy bones and blood.</p> <ol style="list-style-type: none"> <li data-bbox="834 359 1516 449">(1) Cow diets include various forages that they graze as well as supplements that provide additional vitamins and minerals to feed. <li data-bbox="834 455 1446 512">(2) Human diets get their vitamins and minerals from a variety of foods as well as supplements.
<h3 data-bbox="159 569 670 602">Creating Our Cow's Total Mix Ration</h3> <div data-bbox="164 632 711 854">  </div> <div data-bbox="121 873 331 898">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </div> <div data-bbox="734 884 743 894">16</div>	<p data-bbox="786 535 1503 657">In order to make sure that the cattle are getting all the nutrients they need, Ranchers need to find ways to get a variety of foods into their diets. To do this, they often mix feeds together for them to eat.</p> <p data-bbox="786 686 1516 808">Think about a trail mix. It has many different types of foods mixed into it. This is what ranchers may do in order to create a balanced diet for their cattle. This cattle trail mix is a Total Mixed Ration or TMR.</p> <p data-bbox="786 837 1484 894">Ranchers measure out certain amounts of each ingredient and mix it together.</p> <p data-bbox="786 924 1110 951">Let's make a TMR of our own</p>

Slide

Total Mixed Ration

Nutrient	Breeding Cattle	Feedlot Cattle
Protein	7.5 %	13 %
Fat	4 %	4 %
Carbohydrate (Starch/Sugar)	15 %	72%
Carbohydrate (Fiber)	70.5 %	8 %
Vitamins & Minerals	3 %	3 %



Notes

This chart and corresponding graphs give a broad generalization about the difference between breeding beef and feedlot cattle diets. Just like you and me the diets of animals vary depending on their health, age, and what they have going on in their life. For example, an Olympic Athlete has very different nutrition needs than we do. Breeding beef, who exist to reproduce, need a different diet than feedlot cattle, who exist to grow muscle for meat production.

What do you notice is the largest difference between the two diets?

The type of carbohydrate and the amount of protein.

Why do you think this is?

Proteins are used for muscle growth and cattle in the feedlot are being fed to produce more muscle for meat.

Starch and sugar carbohydrates give animals lots of energy to grow quickly. These are high in energy and allow our cattle to grow muscle and fat quicker than fiber carbohydrates.

Fiber carbohydrate provide cattle with energy but require much more work to digest. Breeding animals get most of their energy from fiber as it allows them to grow slower. Since their life cycle is much longer than a feedlot animal, we do not want them to grow too quickly as it can affect their health later in life. Fiber is also needed for cattle to have healthy and happy stomachs (prevent them from getting stomach aches), this is why feedlot cattle do receive some fiber carbohydrates.

All cattle require vitamins and minerals, so their bodies stay strong and healthy. No matter what path these animals take the need for vitamins and minerals is the same.

Total Mixed Rations

Nutrient	Ingredient	Breeding Cattle (Heads)	Feedlot Cattle (Tails)
Protein	Sunflower Seeds (alfalfa/soybeans)	¼ cup	¼ cup & 2 TBS
Fat	Chocolate Chips (DDG/Soybeans)	2 TBS	2 TBS
Carbohydrate (Starch/Sugar)	Com Chex (Corn)	½ cup	2 cup
Carbohydrate (Fiber)	Pretzels (Hay)	2 cup	¼ cup
Vitamins & Minerals	Seasoning Salt (salt and mineral supplement)	1 TBS	1 TBS


Have youth flip a coin to identify which ration they will be making.

Heads = Breeding Cattle

Tails = Feedlot Cattle

Use the recipe provided on the slide to measure out their rations.

Have the students mix up their rations and compare – they can then enjoy their treat while they watch the Bull Sale and Feedlot videos.

Slide	Notes
	<p>Calves that are not kept for reproduction are destined for the feedlot where they will spend the remainder of their life focused on gaining weight and producing muscle.</p> <p>Feedlots specialize in providing cattle with the nutrition needed to produce quality meat that will eventually make it to your grocery store. In this video we will talk with a small feedlot owner and learn a bit about their operation.</p>

SDSU Extension is an equal opportunity provider and employer in accordance with the nondiscrimination policies of South Dakota State University, the South Dakota Board of Regents and the United States Department of Agriculture.

Learn more at extension.sdstate.edu.

© 2025, South Dakota Board of Regents



**SOUTH DAKOTA STATE
UNIVERSITY EXTENSION**

