



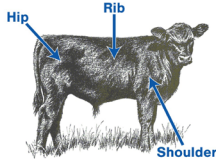

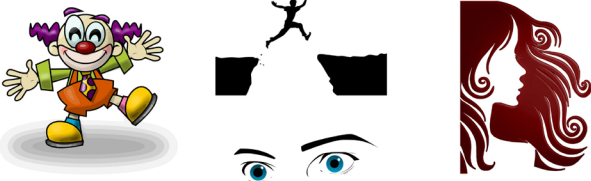





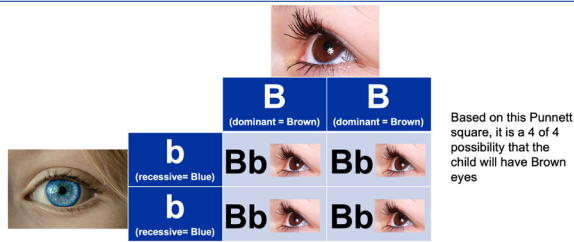


Slide	Notes
<div data-bbox="126 254 326 289">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION  </div> <h2 data-bbox="134 321 443 415">Adopt-A-Cow: Beef</h2> <div data-bbox="134 468 391 516"> Lesson 2 <i>Building Your Herd (Version 3 & 4)</i> </div> <div data-bbox="126 573 496 596" style="font-size: small;"> 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/eo © 2020, South Dakota Board of Regents </div> 	
<h3 data-bbox="155 663 386 695">Lesson 1 Review</h3> <div data-bbox="144 730 462 940">  </div> <div data-bbox="505 751 719 909">  <p style="font-size: x-small;">Original image courtesy of American Angus Association.</p> </div> <div data-bbox="118 961 329 989" style="font-size: small;">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </div> <div data-bbox="735 974 743 989" style="text-align: right; font-size: x-small;">2</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> <ol style="list-style-type: none"> (1) In lesson 1, we learned about the history of beef production in South Dakota. We discussed the cattle on the open range, branding, and the number of communities influenced by men tied to early SD beef production. (2) We also created our own brands which we used to round up our cattle. <p>In today's lesson we are going to learn more about the different types of beef cattle and how cattlemen use traits to build their herds.</p>
<h3 data-bbox="155 1077 362 1108">What is a trait?</h3> <div data-bbox="151 1150 738 1329">  </div> <div data-bbox="118 1371 329 1398" style="font-size: small;">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </div> <div data-bbox="735 1388 743 1402" style="text-align: right; font-size: x-small;">3</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>A trait is a quality or characteristic that belong to someone or something.</p> <p>This could be a character trait, like personality.</p> <ol style="list-style-type: none"> (1) Someone could be funny, honest, courageous <p>Or it could be a physical trait</p> <ol style="list-style-type: none"> (2) Like hair or eye color, height, or birth marks
<h3 data-bbox="155 1465 646 1497">Where did you get those blue eyes?</h3> <div data-bbox="144 1545 738 1724">  </div> <div data-bbox="118 1766 329 1793" style="font-size: small;">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </div> <div data-bbox="735 1780 743 1795" style="text-align: right; font-size: x-small;">4</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>Let's brainstorm physical features that make us similar or different from one another.</p> <p>In addition to eye color, some examples include</p> <ol style="list-style-type: none"> (1) hair color, (2) dimples, (3) freckles, (4) need for glasses, and (5) dominant hand.

Slide	Notes
<p>Traits and Genes</p>  <p><small>SOUTH DAKOTA STATE UNIVERSITY EXTENSION</small></p>	<p>These traits are inherited from our biological parents. We receive one set of instructions (genes) from our moms and one set of instructions (genes) from our dads.</p> <p>This is why family members often look similar. Ask youth if they have any traits they share with their family members.</p> <p>Explain that these characteristics are called traits, and they are inherited from their biological parents. Some traits, such as those listed, are visible; however, there are also other traits that are not observable.</p>
<p>Dominant vs. Recessive Traits</p>  <p><small>SOUTH DAKOTA STATE UNIVERSITY EXTENSION</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>So, if our body receives two sets of instructions, how does it know which one to follow?</p> <p>Think about it this way.</p> <ol style="list-style-type: none"> (1) If your mom tells you to vacuum your bedroom and (2) your dad tells you to pick up the toys off your bedroom floor. <p>Which chore do you do first?</p> <p>Most of us would pick up the toys first, because your floor needs to be picked up before your can vacuum. In this scenario we might say that picking up toys was the dominant task and needed to come first.</p>
<p>Dominant vs. Recessive Traits</p>  <p><small>SOUTH DAKOTA STATE UNIVERSITY EXTENSION</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>Similarly, for every physical trait there is a dominant (more powerful) and a recessive (less powerful) set of instructions. The more powerful instructions will always determine the trait.</p> <p>For example, brown eyes are dominant and blue eyes are recessive.</p> <ol style="list-style-type: none"> (1) So, if you receive brown eye instructions from your dad and (2) blue eye instructions from your mom (3) you will have the dominant brown eyes.

Slide

Dominant vs. Recessive Traits



SOUTH DAKOTA STATE UNIVERSITY EXTENSION

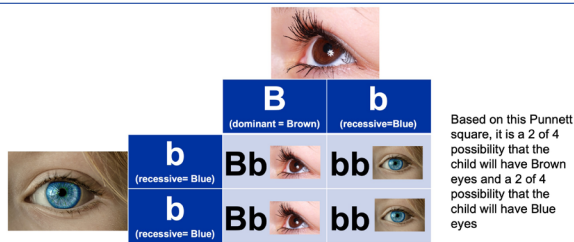
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Each parent carries two sets of instructions, one that they received from their mom and one that they received from their dad.

- (1) For example, a dad, who has brown eyes could have two dominant instructions, represented by capital 'B',
- (2) and a mom with blue eyes could have two recessive instructions represented by lowercase 'b'
- (3) A cool tool called a Punnett square can then show us all the possible instructions that their kids may have.
- (4) In this scenario there is a 100% chance that their child would have brown eyes because all children will receive one dominant (Capital 'B') and one recessive (Lowercase 'b')

Dominant vs. Recessive Traits



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However, there is a possibility that you can have blue eyes even if one of your parents has brown eyes.

This is because someone with brown eyes can also have a blue eye instruction.

Someone with a dominant eye color can carry a recessive gene. So let's fill out the Punnett square for this scenario.

- (1) Click to fill in chart
- (2) Based on this Punnett square two possibilities have one dominant and one recessive gene, so the child will have a 2 out of 4 chance of having brown eyes.

It also has two possibilities with two recessive genes, so the child will have a 2 out of 4 chance of having blue eyes. This might explain why you have Brown eyes, but your brother or sister has blue eyes.

Slide	Notes
<div data-bbox="151 174 414 210" data-label="Section-Header"> <h2>What about cattle?</h2> </div> <div data-bbox="125 270 740 407" data-label="Image"> </div> <div data-bbox="120 478 331 510" data-label="Page-Footer"> <p> SOUTH DAKOTA STATE UNIVERSITY EXTENSION</p> </div> <div data-bbox="730 491 743 504" data-label="Page-Footer"> <p>10</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>Similarly, traits are also passed on in the animal world. Ranchers use genetics to improve their herds by selecting cattle with desirable traits and breeding them.</p> <ol style="list-style-type: none"> (1) For example, a Black Baldy (calf picture) is a type of crossbred beef cow that is produced by breeding (2) A Black Angus bull with (3) A Hereford (Red and White Cow) <p>What physical traits can you see in the black baldy that come from each parent? – White face, black hide</p> <p>Based on these observations, can predict the dominant color? – black hide color is dominant over the red hide color</p> <p>What about the white face? – the white face is dominant over the solid color</p> <p>Not all traits that are passed on are visible.</p> <p>Ranchers use breeding to select for heat/cold tolerance, meat quality, disposition (behavior), and numerous other characteristics.</p>
<div data-bbox="151 957 386 993" data-label="Section-Header"> <h2>What is a breed?</h2> </div> <div data-bbox="151 1029 422 1115" data-label="List-Group"> <ul style="list-style-type: none"> • A group of animals within a species that have a distinct appearance and other similar traits. </div> <div data-bbox="469 1014 714 1245" data-label="Image"> </div> <div data-bbox="120 1262 331 1293" data-label="Page-Footer"> <p> SOUTH DAKOTA STATE UNIVERSITY EXTENSION</p> </div> <div data-bbox="730 1274 743 1287" data-label="Page-Footer"> <p>11</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>On the last slide we looked at two breeds (Angus and Hereford) and a cross-breed calf.</p> <p>But what exactly is a breed?</p> <ol style="list-style-type: none"> (1) A breed is a group of animals within the same species (in this case cattle) that have similar genetics. Cattle within the same breed have similar coloring, body type, and often similar behaviors. You may be more familiar with the term breed being used for the dogs in your neighborhood. You may have a Labrador while your friend may have a Bassett Hound. These are both breeds and have characteristics that are specific for their breed. <p>This slide shows three different breeds of cattle: Black Angus, Hereford (red with white face), and Charolais (solid white).</p> <p>There are over 1000 breeds of cattle across the world.</p> <p>Hand out the breed sheets</p> <p>These sheets contain some of the most popular breeds in South Dakota. Take some time to look through them.</p> <p>What are some similarities and some differences?</p>

Slide

Building a Herd



S D S Good Guy			
S D S Bullseye	→	S D S Herman	
		S D S Ginger	
S D S Milkshake	→	S D S Oreo	
		S D S Buttercup	
Actual BW	Adjusted WW	Adjusted YW	
65	686	1228	
BW	WW	Milk	Marbling
-1.7	57	41	0.62

Notes

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Ranchers select traits of cattle to build a herd that fits their needs. They look at traits beyond what the color of the hide is.

Ranchers utilize information like that shown to select their bulls and cows to build their herd.

Ranchers will often put a special abbreviation in front of their animal's names that is specific to their ranch. This is much like a last name as it lets others know where the cattle were born and raised.

This information shows

- (1) who the cow's/bull's parents and
- (2) grand parents are as well as information about the cow's/bull's characteristics. Some information that it includes is predictions of the
- (3) birth weight and
- (4) weaning weight of their calves,
- (5) Yearling weight
- (6) as well as what their milk production,
- (7) marbling score, and fat thickness should be.

Let's get started on building our herd.

Let's Build Our Herd



Building Your Herd



CLOVER Herf 253

Breed: Hereford
Horns (HH)
Color: Red (bb)
Markings: White face, crest, dewlap (FF)



CLOVER AngX 483

Breed: Angus Hereford Cross
Polled (no horns) (hh)
Color: Black (Bb)
Markings: White face (Ff)

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Before you begin building your ranch's herd, let's do a quick example. Here we have a bull and cow and the details about their genetics. We have information about if they have horns or not, about their white markings, and their hide color. The capital letters represent dominant traits and the lowercase represent recessive traits.

We are going to predict if the calves from this pair will have white markings or not. White markings are considered a dominant trait and are represented by a capital F. The recessive is represented with a lowercase 'f'

The bull is a red and white Hereford.

(1) He has white markings indicated by capital 'FF'. One of the 'F' is from his mother and the other is from his father. He therefore will pass the dominant white markings 'F' on to his calves.

The cow is a Black Angus Hereford cross.

(2) She has a white face, noted by 'Ff'. The capital F indicates a dominant trait. She receives the dominant trait 'F' from one parent (the Hereford) and the recessive 'f' from the other (Black Angus). She can pass either the dominant (white face) 'F' or the recessive (solid color) 'f' on to her children.

Example: Calf Markings



CLOVER Herf 253

Breed: Hereford
Color: Red (bb)
Horned (Hh)
Markings: White face, crest, dewlap (FF)



CLOVER Angx 483

Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)

		Bull's Traits	
		F	F
Cow's Traits	F	FF	FF
	f	Ff	Ff

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

If we want to predict what instructions the calf will get from these two parents, we can use a tool called a Punnett square.

- (1) First, we input the bull's trait – white markings, capital F and capital F and
- (2) Then the cow's traits– white markings, capital F and lowercase F

Then we can fill in the rest of the squares.

- (3) The dominant white face trait (uppercase 'F') is carried through the first column
- (4) The dominant white face trait (uppercase 'F') is carried through the first column

Slide

Example: Calf Markings



CLOVER Herf 253

Breed: Hereford
Color: Red (bb)
Horned (Hh)
Markings: White face, crest, dewlap (FF)



CLOVER Angx 483

Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)

Cow's Traits	Bull's Traits	
	F	F
F	FF	FF
f	Ff	Ff

Notes

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Then we can fill in the rest of the squares.

- (1) The dominant white face trait (uppercase 'F') is carried through the first row
- (2) The recessive solid color trait (lowercase 'f') is carried through the second row

Example: Calf Markings



CLOVER Herf 253

Breed: Hereford
Color: Red (bb)
Horned (Hh)
Markings: White face, crest, dewlap (FF)



CLOVER Angx 483

Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)

Cow's Traits	Bull's Traits	
	F	F
F	FF	FF
f	Ff	Ff

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

Now that we have the Punnett square completed, we can look at what instruction pairs we might get out of this cow and bull.

- (1) We have two options that show 'Ff'. This means that we have two chances that we our calf will received one dominant and one recessive instruction.

Do you remember which instruction was dominant, 'F' white markings or 'f' solid color? – White markings

Do you remember what it means when you have both a dominant and recessive instruction? – You follow the dominant instruction

- (2) We also have two options that show 'FF' which is dominant, dominant indicating that the calf will have white markings as well.
- (3) Since there is a dominant instruction, the calf will have white markings.

Example: Calf Markings



CLOVER Herf 253

Breed: Hereford
Color: Red (bb)
Horned (Hh)
Markings: White face, crest, dewlap (FF)



CLOVER Angx 483

Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)

Cow's Traits	Bull's Traits	
	F	F
F	FF	FF
f	Ff	Ff

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Now that we have the Punnett square completed, we can look at what instruction pairs we might get out of this cow and bull.

- (1) We have two options that show 'Ff'. This means that we have two chances that we our calf will received one dominant and one recessive instruction. Do you remember which instruction was dominant, 'F' white markings or 'f' solid color? – White markings

Do you remember what it means when you have both a dominant and recessive instruction? – You follow the dominant instruction

- (2) We also have two options that show 'FF' which is dominant, dominant indicating that the calf will have white markings as well.
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Slide

Notes

Example: Calf Markings



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CLOVER Angx 483
Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)

Bull's Traits			
		F	f
Cow's Traits	F	FF	Ff
	f	Ff	ff

Based on the Punnett square what is probability that the calf will be a specific color:

0 out of 4 that the calf will be a solid color.
4 out of 4 that the calf will have white markings.

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Building Our Herd



CLOVER Herf 253
Breed: Hereford
Color: Red (bb)
Horned (Hh)
Markings: White face, crest, dewlap (FF)



CLOVER Angx 483
Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)



Bull's Traits			
		F	f
Cow's Traits	F	FF	Ff
	f	Ff	ff

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We are going to use a pair of dice to figure out which set of instructions our calf will have.

In real life, nature would decide which of these pairs of instructions our calves would receive. However, for today, we are going to use a set of dice.

- (1) Our first die, (dice 1) will determine which traits will come from the bull and
- (2) the second (dice 2) will determine which traits will come from the cow.

Building Our Herd



CLOVER Herf 253
Breed: Hereford
Color: Red (bb)
Horned (Hh)
Markings: White face, crest, dewlap (FF)



CLOVER Angx 483
Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)



Bull's Traits			
		F	f
Cow's Traits	F	FF	Ff
	f	Ff	ff

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

- (1) If dice 1 rolls an even number the instructions will come from column 2
- (2) If dice 1 rolls an odd number the instructions will come from column 1

Building Our Herd



CLOVER Herf 253
Breed: Hereford
Color: red (bb)
Horned (Hh)
Markings: White face, crest, dewlap (FF)



CLOVER Angx 483
Breed: Angus Hereford Cross
Color: Black (Bb)
Polled (No Horns) (hh)
Markings: White Face (Ff)



Bull's Traits			
		F	f
Cow's Traits	Odd →	FF	Ff
	Even →	Ff	ff

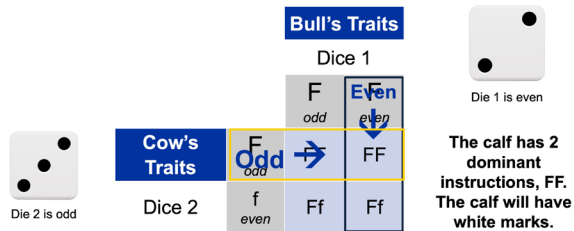
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- (1) If dice 1 rolls an even number the instructions will come from row 2
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Slide

Notes

Example: Calf Markings



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Are you ready to find out what our calf's color is?

Let's roll Dice 1

- (1) Die 1 is even
- (2) so that means that the cow instructions are from row 2
- (3) Let's roll die 2
- (4) Die 2 is odd, so that means the bull instructions are from column 1
- (5) That means our calf is going to have two dominant instructions. The calf is going to have white markings.

Building Our Herd



Now each ranch will complete the same task for the color, horns, and white markings of the pair handed to them.

You can then color your calf accordingly.

If time, you can also put your Ranch's brand on the calf.

Let's meet our adopted calf!



Select the button for the calf your class is following.

Watch intro video of the year's cow and calf.


Review what you learned in the video.

- i. What breed is your cow/calf pair?
- ii. What happens to the baby once it is born? How does this compare to a human baby?
- iii. What is used to identify the baby and ensure that the rancher knows who his mom is?



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Slide	Notes
 <p>Hadlee Holt 5th Generation Farmer Vedvei Charriale Ranch, Lake Park, SD</p>	<p>Watch intro video of the year's cow and calf.</p> <p>Review what you learned in the video.</p> <ol style="list-style-type: none"> What breed is your cow/calf pair? What happens to the baby once it is born? How does this compare to a human baby? What is used to identify the baby and ensure that the rancher knows who his mom is?

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