













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="134 468 358 516"> Lesson 2 <i>Building Your Herd (Version 2)</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/eopaa. © 2020, South Dakota Board of Regents. </div> 	
<h3 data-bbox="155 659 362 693">What is a trait?</h3> <div data-bbox="151 741 740 919">     </div> <div data-bbox="126 961 326 989" style="font-size: small;">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </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. (1) Someone could be funny, honest, courageous</p> <p>Or it could be a physical trait (2) Like hair or eye color, height, or birth marks</p>
<h3 data-bbox="155 1052 643 1085">Where did you get those blue eyes?</h3> <div data-bbox="146 1131 740 1310">  </div> <div data-bbox="126 1352 326 1379" style="font-size: small;">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </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.
<h3 data-bbox="155 1457 389 1491">Traits and Genes</h3> <div data-bbox="290 1520 574 1738">  </div> <div data-bbox="126 1759 326 1787" style="font-size: small;">  SOUTH DAKOTA STATE UNIVERSITY EXTENSION </div>	<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>

Slide

Notes

Dominant vs. Recessive Traits



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So, if our body receives two sets of instructions, how does it know which one to follow?

Think about it this way.

- (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.

Which chore do you do first?

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.

Dominant vs. Recessive Traits



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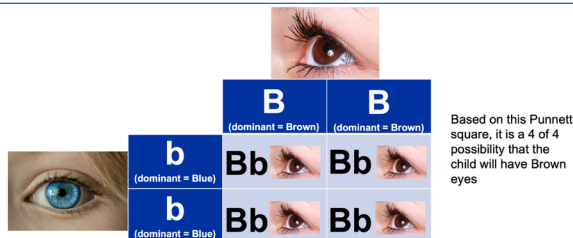
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Similarly, for every physical trait there is a dominant (more powerful) and a recessive (less powerful) set of instructions. The more powerful instructions will always determine the trait.

For example, brown eyes are dominant and blue eyes are recessive.

- (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.

Dominant vs. Recessive Traits



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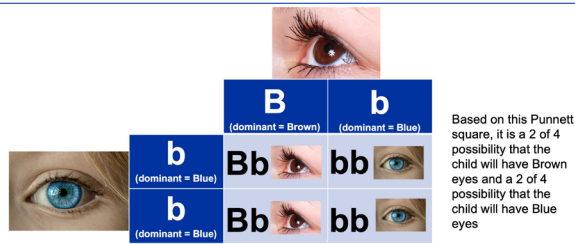
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Each parent carries two sets of instructions, one that they received from their mom and one that they received from their dad.

- (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.

What about cattle?



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

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.

- (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)

What physical traits can you see in the black baldy that come from each parent? – White face, black hide

Based on these observations, can predict the dominant color? – black hide color is dominant over the red hide color

What about the white face? – the white face is dominant over the solid color

Not all traits that are passed on are visible.

Ranchers use breeding to select for heat/cold tolerance, meat quality, disposition (behavior), and numerous other characteristics.

Slide

What is a breed?

- A group of animals within a species that have a distinct appearance and other similar traits.



Notes

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On the last slide we looked at two breeds (Angus and Hereford) and a cross-breed calf.

But what exactly is a breed?

(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.

This slide shows three different breeds of cattle: Black Angus, Hereford (red with white face), and Charolais (solid white).


There are over 1000 breeds of cattle across the world.

Hand out the breed sheets

These sheets contain some of the most popular breeds in South Dakota. Take some time to look through them.

What are some similarities and some differences?

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

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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.

Slide	Notes
<div data-bbox="154 174 448 210">Let's Build Our Herd</div>  <div data-bbox="121 478 329 506">SOUTH DAKOTA STATE UNIVERSITY EXTENSION</div> <div data-bbox="732 493 743 501">12</div>	<p>Let's get started on building our herd.</p>
<div data-bbox="154 567 422 602">Building Our Herd</div> <div data-bbox="154 625 305 726">  </div> <div data-bbox="316 625 487 651">CLOVER Herf 253</div> <div data-bbox="316 655 550 724"> <p>Breed: Hereford Horns (Hh) Color: Red (bb) Markings: White face, crest, dewlap (FF)</p> </div> <div data-bbox="154 739 305 852">  </div> <div data-bbox="316 741 500 766">CLOVER AngX 483</div> <div data-bbox="316 770 492 840"> <p>Breed: Angus Hereford Cross Polled (no horns) (hh) Color: Black (Bb) Markings: White face (Ff)</p> </div> <div data-bbox="121 871 329 898">SOUTH DAKOTA STATE UNIVERSITY EXTENSION</div> <div data-bbox="732 884 743 892">13</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>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.</p> <p>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'</p> <p>The bull is a red and white Hereford.</p> <p>(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.</p> <p>The cow is a Black Angus Hereford cross.</p> <p>(2) She has a white face, noted by 'Ff'. The capital F indicates a dominant trait. She receives the dominate 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.</p>

Slide

Notes

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)

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. **

We can use a tool called a Punnett square to predict what the calves from this match could look like.

This Punnett square shows the potential for the calf to have white markings.

- (1) We can see that there are two possibilities where the calf receives a dominant (capital 'F') and a recessive (lower case 'f') trait

The dominant trait here is the white markings

If a calf receives a dominant and recessive instruction, which would be followed? – dominant

So would the calf have white markings? – yes

- (2) We also have two possibilities where the calf receives two dominant traits (capital 'FF')

Would the calf have white markings? – yes

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)



Cow's Traits	Bull's Traits	
	F	F
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 di.

- (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)



Cow's Traits	Bull's Traits	
	Odd ↓	Even ↓
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

Slide

Notes

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
Odd →	FF
Even →	Ff

Cow's Traits

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

Example: Calf Markings

Bull's Traits

Dice 1

Die 1 is even

Cow's Traits

Dice 2

Die 2 is odd

The calf has 2 dominant instructions, FF. The calf will have white marks.

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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.

Slide	Notes
	<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?
	<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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