

Most breeds of beef cattle have a fixed color pattern that is characteristic for that breed because of previous selection. For example, all Hereford cattle have a red body color with a white face, all Charolais are white, and all Red Poll are red. However, some other breeds may have more than one basic body color, such as red or black Angus, and white, red, or roan Shorthorn. Still other breeds have multiple colors that are unpredictable; for example, spotting, brindling, or solid colors in Longhorn.

A knowledge of the genetic aspects of hair color and experience allow one to predict, with some degree of accuracy, the color pattern to expect among calves resulting from crossbreeding. This fact sheet is to serve only as a guide. The predictions listed here give only the major expected colors. There will be some exceptions because of gene segregation.

Several of the available cattle breeds are categorized by basic body color in Table I. These breeds are identified with the color pattern that is most common in each breed. For example, some Simmental cattle have color markings similar to those of Herefords; however, the majority have extra white that is non-predictable in terms of pattern. Thus, Simmental are categorized as spotted cattle.

Table 2 illustrates the color pattern expected in progeny resulting from the matings of bulls and cows of various colors.

Certainly, one of the strongest arguments for crossbreeding is the use of the crossbred cow. It has been illustrated many times that the average crossbred cow is more productive than the average straightbred cow. However, as we increase the number of breeds involved in crosses, we decrease

Table 1. Basic Body Colors of Cattle and the Breeds Identified with Those Colors

Black	Red	White or Cream	Light Hair Color with Dark Pigment Skins	Spotted	Mixed Colors
Angus	Barzona	Shorthorn	Brahman	Beef Friesian	Beefmaster
Brangus	Devon	Charolais	Brown Swiss	Hays Converter	Braford
Ankina	Gelbveih	White Park	Chianina	Holstein	Longhorn
Galloway	Hereford	Blonde'd	Marchigiana	Maine Anjou	
Welch Black	Polled Hereford	Aquitaine	Murray Grey	Normande	
	Limousin		Romagnola	MRI	
	Lincoln Red		Jersey	Pinzgauer	
	Norwegian Red		Tarentaise	Simmental	
	Red Angus				
	Red Poll				
	Salers				
	Santa Gertrudis				
	Scotch Highland				
	Shorthorn				
	South Devon				

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our ability to maintain complete color control in the offspring. Table 3 illustrates the expected color pattern in offspring from the three-way crossbreds utilizing the F₁ cow and straightbred bulls.

On central markets, cattle are frequently sold with little, if any, information made available about breed or performance. Most buyers will estimate performance (gain, yield, liveability, etc.) in relation to the reputation of the breed; thus, they look for signs that indicate a certain breed or breeds making up crossbred cattle. Some breeds are prone to produce calves that have certain distinct color markings, such as white-face, droopy ears, brindling, skunk-backs, and white stocking legs. Table 4 lists certain breeds that, when crossed with other breeds, frequently produce calves with distinct characteristics. Not all calves carrying this breed make-up will possess these characteristics, but many will have them.

Because of gene segregation, there are nearly always exceptions to the rule. Table 5 gives some generalizations to consider when attempting to set up a breeding program in which color is important. Producers who are unconcerned with color should select superior breeding stock from breeds that excel in economically important traits and blend those breeds together into a breeding program to allow maximum profit.

The opportunity to combine desirable characteristics of two or more breeds (breed complementarity) and increase performance due to hybrid vigor (heterosis) makes crossbreeding a very important mating system for commercial cow herds. Experimental evidence strongly indicates total pounds of calf produced per cow in the breeding herd can be increased 15 to 25 percent in well defined and executed crossbreeding schemes.

This guide provides information about setting up crossbreeding systems that should, in addition to capitalizing on breed complementarity and hybrid vigor, maintain a uniform color pattern for ease of selling the offspring. Color is a highly heritable trait, so it can be selected for or against. In some breeds and breed crosses, the color is highly predictable; however, in other breeds and breed crosses, color is highly unpredictable. For producers who market cattle in groups, color can be an economically important trait.

Table 2. Expected Color Patterns when Crossing Breeds of Various Colors

	Black	Red	White	Light Hair with Dark Skin	Spotted	Mixed Colors
Black	Black	Black	Black-smoky	Black—some brindling	Black—few spots	Mostly black
Red		Red	Red-roan	Red—some brindling	Red or black—some spots	Some red—mostly mixed
White			White	White-grey	Mostly spotted—some white	Mixed
Light Hair with Dark Skin				Grey	Grey—some spotted	Mixed
Spotted					Spotted	Mixed
No Fixed Color						Mixed

Table 3. Expected Offspring Color Patterns (From a Three-Way Cross Using the F₁ Cow)

F ₁ Cows	Bulls				
	Black	Red	White	Spot	Mixed
Black × Black	Black	Black	Mostly black	Mostly black	Mostly black
× Red	Black	Black & red	Black & red	Variable	Mixed
× White	Black	Black & red	Black-smokey	Black-mixed	Mixed
× Spot	Black	Black & red & spots	Black-mixed	Black & spots	Mixed
× Mixed	Black	Black & mixed	Black-mixed	Mixed	Mixed
Red × White	Black	Mostly red	Mixed	Mixed	Mixed
× Spot	Mostly black	Mostly red	Mixed	Mostly spots	Mixed
× Mixed	Mostly black	Mostly red	Mixed	Mixed	Mixed
White × White	Diluted black	Red-roan	White	Spots-white	Mixed
× Spot	Mostly black	Red-spot	White-spot	Spots-mixed	Mixed
× Mixed	Mostly black	Mixed	Mixed	Mixed	Mixed
Spot × Spot	Spots—mostly black	Red-spot	Spot	Spot	Mixed
× Mixed	Spots—mostly black	Spot-mixed	Spot	Spot	Mixed
Mixed × Mixed	Brindling—mostly black	Mixed	Mixed	Mixed	Mixed

Table 4. Breeds that Commonly Leave Specific Color Markings Suggesting Their Presence in Crossbred Calves

White-Face	Brindling	Skunk-Backs	Stocking Legs	Droopy Ear and Navel
Hereford	Jersey	Charolais	Holstein	Brahman
Polled Hereford	Brown Swiss	Pinzgauer	Beef Friesian	Brangus
Simmental	Brahman	Maine Anjou	Santa Gertrudis	
Chianina		Simmental	Braford	
Tarentaise		Hays Converter		
Longhorn		Hereford		
		Polled Hereford		

Table 5. Generalizations to Remember if Trying to Create a Certain Color Pattern

Things to do:

1. Want to create a black baldy?

- a. Infusion of Hereford will put white or brockle face on essentially any color of cow.
- b. Infusion of Simmental will put striped or blazed face on solid colored cows but white face on white faced cows (i.e., Hereford or baldy cows).
- c. Black is dominant to red color in cattle. Thus, the first cross between black and red will produce essentially all black (depends upon frequency of black cows to bulls that are red carriers) calves. If the second cross is to a red bull, the color of calves will be 1/2 black:1/2 red; but if a black bull, then the calves will again be essentially all black.

d. Breed examples

Angus		Hereford		Black baldy calf
Brangus	×	Simmental	→	
Galloway				

2. Only want one body color from three-breed cross program?

- a. If red is desired, producer must use only red breeds.
- b. If black is desired, producer must use only black breeds.
- c. A mixture of red and black breeds will produce black offspring the first cross but a mixture of red and black (close to 50-50) in second and third crosses.

3. Color not important?

- a. Use any breed, just concentrate on blending breeds for production traits such as milk production, fertility, growth, etc.
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