Selection in Bull Buying Can Lessen Surprises in Calf Crop

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Beef producers commonly ask, "Why didnít the bull I purchased breed true?" Upon reviewing the calf crop, most of the calves look somewhat similar, but there may be those occasional calves that just donít fit the mold.

Often, the value of the last calf on the truck may very well be your profit, so the question is a very serious concern. The core of the problem (if you can even call it a real problem) is livestock producers do not control what genetic material (ie. genes) a bull actually passes on to his offspring.

A live calf is assured by the presence of many highly conserved genes. In other words, genes which assure your calves will have tails, are fairly secure. Granted, a tailless calf could be born, but generally itís one of those events you actually invite the neighbors over to see, since the foredrawn conclusion is, "I wonít see this again". Another way of putting the equation, we are 100 percent certain when a bull breeds a cow, a calf, not a lamb will be produced.

This may sound like an oversimplification but the preservation of species is a very delicate matter, and the genetic code takes things very seriously. The genetic code equates the DNA bases within chromosomes to a corresponding amino acid, which ultimately makes proteins. The proteins are the basis for life, since every gene codes for a protein.

These proteins determine how a calf survives, functions and ultimately, what the calf looks like. Unfortunately, the naked eye does not see DNA strands, nor the individual proteins. However, with the aid of a microscope, we can see the chromosomes that contain the DNA.

The end product of a bull is directly related to what genes are contained in his chromosomes and what sample of genes are passed to the calf. The biology of a cell, and management of chromosomes is very similar to running a train station.

There are 60 trains (chromosomes) in every cell of a bull, cow or calf. These trains are genetically coded and every cell does what that cell was predestined to do. In a healthy animal, all 60 trains are running well. This is true for all cells, except the reproductive cells. These cells have only one primary function, to continue the ancestry of the bull through the sperm cell or ancestry of the cow through the egg. This is a huge undertaking, since cattle, just like humans where not made to naturally clone themselves.

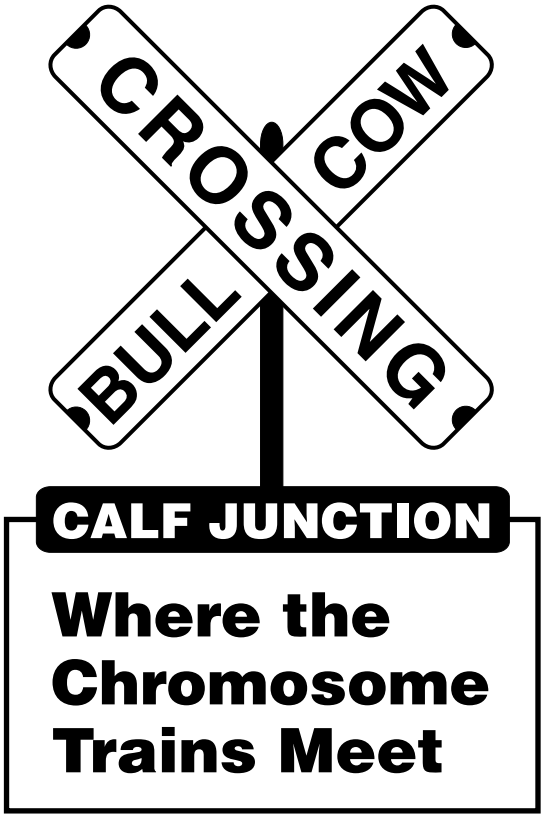
The sperm and egg cells go through a process of division, with an end result of decreasing the number of trains (chromosomes) in half. To better understand the process, in a size we can comprehend, the cell has two train masters controlling the 60 trains. As the point of separation approaches, each train master aligns all the trains and pairs each train (chromosome) with itís matching train. Once every thing is lined up, each train master takes thirty trains, one from each pair, (chromosomes) and they arrive at a new station and the cell divides, one set of 30 trains (chromosomes) in each cell. This cell, if in a male becomes a sperm cell, and if in a female becomes an egg.

Upon fertilization, the sperm cell delivers 30 trains and the egg cell delivers 30 trains, and a new life is created. The important point is this: no matter how much selection effort you apply, you can never control which trains go to which sperm cell. A bull produces billions of sperm cells, each with a unique combination of trains and cars. This process is known as independent assortment and random segregation, a process designed to keep us all honest.

Selection will increase the probability of a particular gene being in a sperm cell, but will never control which gene goes into a particular sperm cell. Keep in mind, every gene is paired, and the bull only sends one, not two. So if the calf doesnít meet your expectations, well, that is just the way it is.

May you find all your ear tags.

Your comments are always welcome at *www.BeefTalk.com*. For more information, contact the North Dakota Beef Cattle Improvement Association, 1133 State Avenue, Dickinson, ND 58601 or go to *www.CHAPS2000.com* on the Internet. In correspondence about this column, refer to BT0131.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