



### The Future of Dairy Cattle Genetics

A colleague recently told me that he had found a copy of a paper that I wrote for the 1998 National Dairy Genetics Workshop. The title of this paper was “What will make U.S. A.I. genetics valuable to commercial dairies in the future?” My colleague said that it is interesting to read what was written in the past and see how much of it comes true. A copy of this article is can be accessed by clicking on the link <http://www.metzgerdairygenetics.com/newsletters/dairy.wkshp.pdf>.

The first key point of the article was that genetic evaluations for traits relating directly to profitability must be made available. Traits mentioned in the article that have become available in the last thirteen years include sire stillbirths, maternal calving difficulty, maternal stillbirths, and daughter pregnancy rate. Today, accuracies for these traits could be improved by including breeding and calving records from herds that are not on official milk recording in genetic evaluations. Traits that were mentioned that are not yet available as genetic evaluations include daughter survival from birth to first calving and feed efficiency.

The second key point of the article was that selection decisions should be based on economics not emotions. Morris Ewing was quoted, saying that registered cattle exist to help the commercial producer be more profitable by providing genetic material for improving his herd. The article also stated that the A.I. industry must be more diligent in their selection of parents for the next generation of young sires. Little did we know how much selection of young sires would be changed with the development of the SNP chip and genomic evaluations. An important point to remember is that this technology requires performance data to predict the value of each individual SNP so we will need to continue to collect performance data in the future.

The final key point of the article was that trends of increased relationship and inbreeding must be reduced. The article stated that the simplest method for commercial dairies to reduce inbreeding levels in their females is to crossbreed. The table below shows U.S. domestic semen sales for Holstein and non-Holstein dairy breeds in 1998 and 2009. In eleven years, the number of units of Holstein semen sold domestically increased by 57% while units of non Holstein semen increased by 121%. From this data, it appears that crossbreeding has been adopted by a portion of the U.S. dairy industry.

Is there anything that can be done for those dairies that want to maintain a purebred herd but are concerned about inbreeding? At a minimum the sire and maternal grandsire of each cow should be recorded. This allows individual matings with a high level of inbreeding to be avoided or selecting service sires that are less related to a major portion of the females in the herd. However, the best long term option would be for genetic suppliers to maintain distinct sire lines that are less related to each other and can be crossed on each other to produce milking females that have lower levels of inbreeding.

I will attempt to explain the sire line concept with an example. Two highly proven Holstein bulls that sire trouble free daughters and are not highly related to each other are Oman, a son of Manfred, and Ramos, a son of Rudolph. Mating these bulls to each other's daughters will produce females that have a low level of inbreeding themselves. However, if many bulls that enter A.I. are the result of mating Oman and Ramos to each other's daughters then the resulting bulls can not be mated to either Oman or Ramos daughters without producing females that have a high level of inbreeding. A better alternative for commercial dairies would be for genetic suppliers to produce Oman sons out of Manfred daughters and Ramos sons out of Rudolph daughters. This concept, suggested by both Dr. Jay Lush and Dr. Ben McDaniel, allows losses due to inbreeding depression in sire lines in order to reduce losses in commercial production females.

It is interesting to look back and see what has changed. However, it is more useful to predict what is needed for the future and work to provide that. In the future, livestock operations will need to continue to produce human food while using the least amount of inputs. Our genetic selection must be focused on maximizing protein and energy production while minimizing feed and labor inputs.

### U.S. Domestic Semen Sales

Breed	1998	2009	Increase
Holstein	11,574,275	18,171,745	57%
Other	894,316	1,976,697	121%
Total	12,468,591	20,148,442	62%

## **Animal Rights**

Animal rights is the belief that animals should have the same rights as human beings and should not be used as food, clothing, research subjects, or entertainment. Those of us associated with animal agriculture wonder what would cause a person to believe this. Belief in animal rights is a logical conclusion for those that believe in the theory of Evolution. The theory of Evolution states that life arose from chemicals by random processes or chance and major life forms arose by random and unguided processes over millions of years that resulted in simpler life forms evolving into more complex life forms. In the words of PETA's founder, Ingrid Newkirk, "When it comes to pain, love, joy, loneliness, and fear, a rat is a pig is a dog is a boy."

An alternative view to animal rights, know as animal welfare, is that there is nothing wrong with using animals as resources as long as there is no unnecessary suffering. The basis for this belief is that God created mankind in his image and to have dominion over the earth. In other words, human beings are special in the eyes of God and are separate and distinct from all animals.

If there is no God who created man in his image to rule the animals of the earth, then there is no basis for animal agriculture. Even more importantly, without God there is no basis for human equality which is the key to freedom and democracy. If human beings are not all created in the image of God, then why would they all deserve fair and equal treatment? Without a belief that God created all human beings equal, then the strongest and most powerful can treat others however they see fit. This is a frightening thought unless you are a member of the group in power. Think of those who were not deemed worthy by the Nazis in Germany in the 1930s and 40s. Is it a coincidence that the Nazi government was the first to attempt to break the species barrier between humans and animals. Aryans were at the top of their hierarchy followed by wolves, eagles, and pigs, with Jews at the bottom with rats. Do animal rights supporters bring animals to the level of humans, or, do they lower human beings to the level of animals?

## **Metzger Dairy Genetics**

Livestock were created to produce human food. Our business is helping your food production business be more profitable. Metzger Dairy Genetics provides genetic improvement services for livestock producers. Services include sire selection, semen purchasing, breed selection, breeding systems, and female selection. For help with your livestock genetic improvement program contact:

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