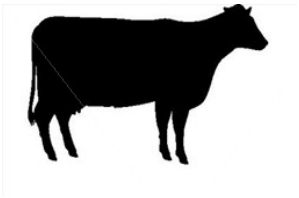

# Metzger Dairy Genetics

Better livestock to feed mankind

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## The Basics of Sire Selection

A PTA (Predicted Transmitting Ability) is an estimate of what a bull or cow will transmit to its offspring on average for a specific trait. The following table compares the PTAs for milk yield, daughter pregnancy rate, and body size composite for two high reliability Holstein bulls:

| Name | Milk | DPR | BDC |
|---|---|---|---|
| ART-ACRES **WIN** 395-ET | 2,008 | 1.4 | -0.5 |
| EK-OSEEANA **ASPEN**-ET | -934 | -4.1 | 3.5 |
| Difference | 2,942 | 5.5 | -4.0 |

We would expect the average daughter of WIN to produce 2,942 more pounds of milk in 305 days than an average daughter of ASPEN. This is about 10 extra pounds of milk per day. Additionally, on average 5.5% more WIN daughters will get pregnant in a 21 day period than will ASPEN daughters. Each 1 percentage point increase in daughter pregnancy rate equals 4 less days open. This means that the average daughter of WIN should have a 22 day shorter calving interval than the average daughter of ASPEN. Furthermore, because each one point change in body size composite is equal to 24 pounds of body weight, we would expect the average daughter of WIN to weigh 96 pounds less than the average ASPEN daughter.

These PTA values are calculated by solving equations that weigh information about an animal's own performance, it's relatives' (parents, siblings, and offspring) performance, and the animal's DNA (genomic prediction).

A PTA predicts what an individual will transmit for that specific trait and not for any other trait. For example, the bull WIN's PTA for milk does not indicate anything about his PTA for udder composite. An animal's PTA for a specific trait can change over time as more information is added. An example would be a bull that added information from a large number of new daughters. In addition, selecting for a single trait can cause a large change in other traits over time. If we select for animals that are thinner (higher dairy form), over time we will see a decrease in fertility.

Most operations prefer to improve more than one trait at a time. What is the most effective method of sire selection to accomplish this?

The most common method of sire selection is using independent culling levels. An example of this is to use bulls that are over +1,200 pounds of milk, over +1.0 points for daughter pregnancy rate, and less than 1.0 points for body size composite. The disadvantage of this method is that a shortfall in one trait can not be compensated by outstanding performance in another trait. For example, a bull that is +1,199 pounds of milk, +2.0 points for daughter pregnancy rate, and –1.0 points for body size composite would not be used. Additionally, with this method it is difficult to put the proper amount of emphasis on each trait.

The most effective method of sire selection is the selection index method. Examples of selection indexes are Net Merit, TPI, and JPI. In the selection index method, each trait is weighted by its importance. Let's create a selection index using the traits of PTA Milk Yield, PTA Daughter Pregnancy Rate, and PTA Body Size Composite. We will put 40% of the weighting on Milk Yield, 30% on Daughter Pregnancy Rate and 30% on smaller Body Size Composite (a negative weight). To calculate the selection index value for each bull we will multiply his PTA Milk by 40, his PTA DPR by 30, and his PTA Body Size Composite by –30. We also need to divide each trait by its standard deviation to account for the spread of each trait. The standard deviation for PTA Milk Yield for Holstein bulls on the December Active A.I. List is 653 pounds, the standard deviation for PTA Daughter Pregnancy Rate is 1.3 percentage points, and the standard deviation for PTA Body Size Composite is 0.9. So, the formula to calculate the selection index for each bull is 40 X PTA Milk / 653 + 30 X PTA DPR / 1.3 –30 X PTA Body Size Composite / 0.9. The table below shows the three highest and the three lowest ranking high reliability (>89%) Active A.I. Holstein bulls for our example selection index.

Hopefully you now have a better understanding of how to select the proper bulls for use in your herd. If you are interested in developing a selection index appropriate for your operation and receiving a list of the highest ranking bulls, please contact us.

| Name | Index | Milk | DPR | BDC |
|---|---|---|---|---|
| ART-ACRES WIN 395-ET | **173** | 2008 | 1.4 | -0.5 |
| CO-OP O-STYLE OMAN JUST-ET | **140** | 1862 | 2.2 | 0.7 |
| DE RITH CHASSEE | **137** | 272 | 2.2 | -2.1 |
| | | | | |
| ERBACRES DAMION | **-134** | -499 | -0.4 | 2.8 |
| SILKY GIBSON | **-139** | -835 | -1.6 | 1.5 |
| EK-OSEEANA ASPEN-ET | **-268** | -934 | -4.1 | 3.5 |

# Doing the Right Thing

I recently watched a video series called "Doing the Right Thing" that helped me understand why today people seem to be treating others worse than I remember in the past. The authors introduced the series by saying that we are facing a serious crisis of ethics. They defined ethics as standards of behavior. These standards determine how we act and our relationships with other human beings. In the past, standards of behavior were based on a source or authority outside of human experience such as the natural law or God. However, many people now believe in the idea of moral and ethical relativism which means that standards of behavior are not based on truths, but are dependent on the situation and the people involved. In other words there is no standard of right and wrong and we can't judge the choices that other people make. This leads to more laws and government regulations which takes away more of our freedoms. The authors suggested that if human beings are to survive as a free society, we will need to determine and build agreement around some basic standards of behavior.