

# Management Traits - Milk, Test and Type

by David Selner

Breeders have relied on breeding goals of milk, test and type for generations of dairy cattle. Under these general goals the progress made in dairy cattle improvement has been dramatic. Cows are able to produce 200 pounds of milk per day, produce 2000 pounds of fat, 300,000 pounds of milk lifetime, live to be 14 years old & still be productive and be four time champions at national shows. The average production per cow in the United States has risen dramatically and dairymen have been able to grow their dairies. This certainly looks like a successful program. So why are you hearing so many new approaches to breeding and some radical departures from this time-tested system?

Because this system of selection has also brought about some other traits that are maybe not as easily noticed but certainly do have an impact on the future profitability of a dairy. As cows are producing more they seem to have more health problems. Several research studies have also shown these trends. Cows have more mastitis, reproductive problems, and metabolic diseases with increasing levels of production. More production and modern feeding & housing systems may also contribute to more locomotion problems, decreased symptoms of heat, more stress, and reduced longevity. Individually these may not seem to be much but when you put them all together they can add up to a lot of veterinary expense, more heifer replacement costs, and excessive loss of production. This combination of factors is rising in cost at a faster rate than the value of milk in the marketplace, and this is changing the dynamics of how a dairyman is to make a profit. No longer is having the highest herd average or shipping the most milk a guarantee of being profitable. Today's dairymen have to start looking at longevity and production minus costs as the true measure of profitability. That's why you are seeing emphasis being put on traits other than milk, test and type.

One of the first new traits to be used was productive life (PL). PL is a measure of how long a bull's daughters live in comparison to daughters of other bulls. This trait is based on actual culling data and is also adjusted for type traits that improve longevity. The trait is expressed in months plus or minus from average. Now a month of life may not seem like much to you but if you add it up over all the cows in your herd or hundreds of daughters it can amount to a lot of money in reduced rearing costs and more production.

Another of the new traits is Somatic Cell Score (SCS). The SCS trait is a measure of the somatic cell count of a milk sample. Herds routinely test for somatic cell score to monitor herd health and detect sub-clinical cases of mastitis. Cows with high levels of somatic cells are fighting off infections and losing milk production. So by measuring the differences between cows in the same herd for SCS we can determine indirectly their susceptibility to mastitis infection. The SCS trait is expressed as higher or lower numbers around the average of 3.00. Thus cows with lower numbers are less susceptible to mastitis while those with high numbers have more mastitis.

The trait Daughter Calving Ease is another of the new genetic values that has been published. In the beef industry this has been a trait of prime importance for many years. Traditionally the dairy industry has only focused on the trait sire calving ease, which generally relates to the size of the calf. The beef industry found out that it was



more important how a bull's daughters calved than just the calf itself. These factors contribute to longevity as well as fertility in subsequent lactations. It is obvious to me, since we have had sire calving ease evaluations for generations and have made no progress in reducing calving ease problems in the population, that we have concentrated on the wrong trait. This trait is expressed in percent difficulty in having a first calf. The lower the number the easier the calving is and the less problems the cow experiences.

The final trait that has been researched is daughter fertility. This is expressed as daughter pregnancy rate (DPR). The percent difference between cows becoming pregnant from 50 to 250 days after their last calving is measured for each cow based on her next calving date. It's the percent that would become pregnant for each 21 day cycle after their calving date. Each one-percent more would mean four less days open for that lactation. So the higher the number the greater fertility for a bull's daughters compared to the breed average. Utilizing this trait should result in increasing the pregnancy rate and reducing days open in the population.

As you can see there has been a lot of effort and research done on these new traits. The direction and intent of these traits is definitely correct and should be a real help to dairy cattle breeders. However one must remember that these cannot be measured early in a lactation and have much lower heritabilities than the old traits of milk, test and type. Because of this fact, they take more observations and more time to get completely accurate data as compared to the previous traits. That is why you see a lot of variation in these traits on newer sires, which frustrates many breeders. Again it is best not to practice the selective level method for each of these traits. Don't try to set magic levels for each trait and then select sires, this will drive you crazy. These traits are best included in an index like Net Merit or TPI and not practicing individual trait selection. The only time when you might help yourself is to always discard the very poor sires for these traits so you avoid the worst of all possibilities.

We are entering a whole new era in cattle breeding. We will be selecting for greater fertility, more longevity, reduced metabolic problems and more mastitis resistance. This means that we will not be achieving as much gain in milk production. There is always a trade off when selecting traits, as some traits are antagonistic to each other. Just like no sire is the best for every trait.

I believe that these changes in emphasis are going to lead to more profitable cows that will help the United States dairyman. These will also be the cows that will be in high demand by foreign countries as well. So don't be afraid or left behind. Go ahead and use the new traits wisely by selecting or creating an index that includes these traits and be a leader in breeding the next generation of profitable cows.

**EDITOR'S NOTE: Many thanks to Dr. Selner for this excellent article on management traits. The value of these traits has long been overlooked. They play a major role in profitability.**