

The Cow of the Future

By Steve Schnell

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What kind of cow will you need five, 10 or 15 years from now to be competitive in the dairy industry? What are some factors to consider? There will likely be more cows per herd, less intense management of individual cows, a need for cows that easily fit into the system and tighter margins on a per cow basis. Along with these, there will likely be less skilled labor available per cow including herd managers and veterinarians. All of these factors boil down to the fact the cow of the future will need to be highly productive yet low maintenance.

If we made a **wish list** of the things we would like every cow to do, it would read something like this:

- Calve easily
- Have a healthy, live calf
- Transition from non-lactating to lactating with minimal problems
- Produce high quantities of milk with good component levels
- Have a low SCC and healthy udder which is easy to get milk out of
- Breed back easily and carry calf to term
- Requires minimal foot care
- Stay out of the hospital pen
- Do the above profitably at least 3-4 times

Hopefully we all agree this "wish list" is what we are looking for in every new heifer we bring into the herd. The bigger question is how to produce heifers with these abilities? Historically, we tried to change the exterior of the cow to make her function better - making her taller, longer, more dairy, wider rumped, shallower uddered, etc. Now some of these physical characteristics are important, but the point is most of the things on the wish list we can not see or judge based on the cow's appearance. Most are internal functions relating to health, vigor, functions of the reproductive system and the ability to deliver a healthy calf. Fortunately, today we have genetic tools to help us breed a more functional, profitable cow.

Easy Calving, Healthy Calf

If we think of the wish list, it starts with an easy calving and a healthy calf. The use of calving ease bulls on heifers has been a common practice for many years dating back to the 1970s when Genex developed the first calving ease sire rankings with Iowa State University. Clearly, using service sires that produce calves that are born more easily is one way to have less calving problems. Yet the last time I checked, the heifer still is the one having the calf. Fortunately, Daughter Calving Ease (DCE) measures the heifer's/cow's contribution to whether the calf is born easily. In fact, it appears the female's influence is as big as the sire's.

When you are selecting bulls are you selecting genetics that will reduce calving problems in your herd in the future? The range in sires for DCE is 4% to 14%. Said another way, if you had a group of daughters from the 4% DCE bull versus a group of the 14% DCE bulls and use the same service sire on both groups you would expect to have 10 more difficult birthings per 100 for the daughter of the 14% DCE compared to the 4% DCE group.

Another way to look at it is using calving ease bulls is a good thing, but is a little like a short-term fix. If you want to breed a herd that can calve more easily in the long term, then you need to concentrate on DCE.

In regards to a healthy, live calf, there are now genetic tools just like SCE and DCE available called Sire Stillbirth (SSB) and Daughter Stillbirth (DSB). And yes, like calving ease, you can select bulls that reduce the number of stillbirths and can breed for a herd that is more likely to produce a live calf. The difference between the daughter of the best and poorest sires for DSB is 10.6% more or less live calves born per 100 depending on if you had daughters of the good bull compared to the poorest for DSB. This trait surely stands out to your maternity barn manager who prefers to be calving heifers with the genetic ability to have more live calves.

Low SCC, Healthy Udder

Going back to the wish list - some of the traits like milk production, fat and protein percents or pounds, correct udders and feet and legs are things we have been selecting for for a long time. Developing a herd of cows with a lower Somatic Cell Count (SCC) and less mastitis can be accomplished by looking at a bull's Somatic Cell Score (SCS) proof. Sires can have a definite impact; Daughters of the poorest SCS bulls will have twice as high a SCC compared to daughters of the better bulls. Said another way, you can significantly lower your herd's SCC by using the better bulls for SCS.

Breed Back Easily

Fertility and getting cows pregnant certainly are major points of emphasis on modern dairies today. In some cases, when selecting which bulls to buy semen on more emphasis is on the sire fertility rankings than on the bull's genetic potential! Yet, not much emphasis is placed on the future daughter's ability to conceive.

Currently USDA evaluates the cow's contribution to a herd's pregnancy rate. This trait is known as Daughter Pregnancy Rate (DPR). Each point of DPR is equal to four days open or a 1% change in a herd's pregnancy rate. In fact, the genetic makeup of your herd for DPR could be +/-3-4% than another herd just by the bulls they used in the last couple generations.

The range between the best bull's daughters and the poorest bull's available today is over 8%. That is correct. A group of daughters of one bull in your herd compared to another could have about an 8% difference in pregnancy rates. In the long term, looking at genetics in the semen and selecting for more fertile cows will build a herd that is reproductively efficient.

Do All This Profitably, 3-4 Times

A number of things on the wish list really contribute to a cow's ability to live a long life - like have a calf easily, then getting up and going with minimal problems, not having mobility problems and just staying out of the sick pen. For some cows nothing gets them down, and the next always seems to need help to keep going. These all are a part of a trait called Productive Life. Productive Life measures, in months, how long daughters of one bull stay in a herd compared to another. In the end, the profit lays in cows that can stay on for multiple lactations.

Surprisingly, looking at the bulls you can buy semen on the difference in longevity of the best to the worst is over one year! In my book that's a big difference, and the best managers likely can't manage well enough to add a whole year of life to every cow. Producers who have been selecting for Productive Life over that last 14 years since it has been available clearly have an advantage over those who have not.

How to Sort Through the Traits?

If the wish list represents what you would like to be breeding for, the question becomes how do I sort through all the different traits on all the bulls and select the ones that get it done? That's a good question and one that USDA and university scientists along with the United State's artificial insemination industry have been perfecting for the last 14 years. It's an index called Lifetime Net Merit (LNM\$). It's put in dollar terms and combines the production, physical health and calving traits into one number based on how they affect the lifetime profit of daughters of one bull versus another.

Starting and finishing with the highest LNM\$ bulls in your tank is the way to get cows that meet your wish lists!

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