

**It's Sire Summary Time Again . . .  
Zero In on the Information You Really Need**

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It happens around the middle of February, and then again in May, August, and November. Maybe you'll see some bull lists in your favorite dairy magazine, or maybe your semen salesmen show up with an armload of new promotional materials. Either way you'll know – it's sire summary time again!

Data for important traits like milk production, type, and somatic cell score are collected throughout the year on millions of dairy cows, but analyzing this mountain of information is a big job, so scientists only do it four times a year. Performance records are adjusted for factors such as age of cow and stage of lactation, and then each cow is compared with other cows that were in the same herd during the same time period. The result of this exercise is a set of predicted transmitting abilities (PTA) for each animal – these are estimates of the genetic superiority (or inferiority) that a particular animal will pass to its offspring. Genetic information is produced for both sires and cows, but because few farms have the luxury of using this information to select among a big group of excess replacement heifers, this article will focus on using genetic information for dairy sires. Each sire is evaluated for milk, fat, protein, fat percent, protein percent, productive life, somatic cell score, calving ease, male fertility (ERCR), final type score, seventeen linear type traits, and four composites. This means that you can get information for 31 traits on about 800 active AI bulls (roughly 600 Holstein) at any given time. Nobody has time to study all of this data, so what's a sensible farmer to do?

A common, but incorrect, approach is to pick several important traits and apply an independent culling level for each one. For example, you might decide that you'll only use bulls that are at least +1200 milk, +0.05 protein percent, +1.25 udder composite, and +1.00 feet and legs composite. This seems like a reasonable approach, but setting these levels is very difficult, and the tendency for most people is to include too many traits. How could we leave out somatic cell score, or fat percent, or productive life, or stature? As you keep adding traits, there will be fewer and fewer bulls that meet your criteria. And, more importantly, you'll probably select a bunch of bulls that are pretty mediocre for every trait. In other words, you'll end up with a "jack of all trades", but a master of none.

A better approach is to combine information from all of these traits into an economic index. Individual traits are weighted according to their economic importance, and genetic relationships between traits are taken into consideration. Fortunately, USDA Animal Improvement Programs Laboratory and the major breed associations will take care of this task for you. The primary index is Lifetime Net Merit – this index measures the expected lifetime net profit of daughters of each dairy sire, relative to

the breed average. Each of the breed associations produces an index of its own, but for the most part these are quite similar to Net Merit, so I'll limit my discussion to the Net Merit, Cheese Merit, and Fluid Merit values provided by USDA.

**Net Merit** = 36% Protein + 21% Fat + 15% Productive Life – 9% Somatic Cell Score + 7% Udder + 5% Milk + 4% Feet and Legs – 4% Body Size

**Cheese Merit** = 42% Protein + 18% Fat + 12% Productive Life – 8% Somatic Cell Score + 6% Udder – 6% Milk – 4% Body Size + 3% Feet and Legs

**Fluid Merit** = 43% Milk + 16% Fat – 12% Protein + 11% Productive Life – 7% SCS + 5% Udder + 3% Feet and Legs – 3% Body Size

For the vast majority of dairy producers, Net Merit will be the index of choice. It considers production, health, and functional type, and the weights given to milk, fat, and protein are based on national average milk prices. About two-thirds of the emphasis is on production, and the remaining one-third is on functional traits. Note that somatic cell score gets a negative weight, because we want lower scores. There is also a slight negative weight on body size – this reflects differences in maintenance feed requirements for large versus small cows. Two alternatives are offered for producers with unique milk payment situations. For farmers who are paid exclusively for components, with no premiums for milk volume, Cheese Merit would be an appropriate choice. It places more emphasis on protein yield, and excess milk volume is penalized. On the other hand, Fluid Merit may be a useful choice for farmers who are paid solely for milk volume. This index places much more emphasis on milk yield, and protein actually gets a negative weight (if you don't get paid for it, why produce it?).

What about semen price? Obviously this is a consideration, but cheap bulls are usually cheap for a good reason. In fact, if you have a good reproductive management program, you will find that the highest Net Merit bulls tend to be the best bargains. This will certainly be the case for virgin heifer matings, because conception rates are quite high. You should always use your most expensive semen where it is most likely to result in a heifer calf; it will take twice as many units of semen to get a live calf from a high-producing mature cow than from a virgin heifer. Lastly, remember that there are a lot of good bulls available, and chasing the "hot" bull with limited semen availability and a premium price isn't necessarily a good use of your semen dollar.

What about reliability? Reliability measures the accuracy of the genetic information for a given sire and, hence, the variability in results that you should expect when using that bull in your herd. Bulls that have been adequately progeny tested across many herds will typically have reliability values of 80% or higher. Although bulls

shouldn't be selected or excluded based only on reliability, it can be a guide as to how many units of semen should be purchased for each bull.

Hey! What about young sires? The genetic merit of young sires has been well documented. The average young sire from a major AI organization will rank slightly higher than an average proven AI sire, but the price will be lower, and well-managed herds will usually be eligible for incentive payments from the AI stud. On the other hand, the average young sire will not be nearly as good as an elite proven AI sire. Mating 25-30% of your herd to AI young sires is a reasonable strategy, but herds that pick from the top end of the Net Merit list will make much faster genetic progress than herds that rely too heavily on young sires or inexpensive proven sires.

Once you've selected a top group of bulls, the job's almost done. You'll probably get good results even if you randomly mate these bulls to the cows in your herd. However, you can get some extra profit by using a corrective mating program. These programs were designed to correct faults in the physical appearance of the cow, and there's nothing wrong with that. But the best part is that most mating programs will also help manage inbreeding. Most farmers have neither the time nor the desire to scan the pedigrees of every bull and cow to search for common ancestors. A computer can do this much more quickly and more effectively. Mating programs are inexpensive, and most AI studs and breed associations will be happy to provide this service.

In summary, remember these key points and you'll have little trouble using sire summary information successfully:

1. Identify your selection goal. For most producers, this will be Net Merit. But producers who are paid exclusively for components may wish to consider Cheese Merit, and those who are paid solely for milk volume might want to consider Fluid Merit.
2. Identify a group of five to ten bulls that rank as high as possible for the index you've chosen. Check to make sure that you have a few calving ease bulls to use on your virgin heifers, and try to avoid expensive, limited supply bulls if other good bulls are available. Plan to use the most expensive semen on your virgin heifers, because you'll increase your odds of getting a calf.
3. Consider enrolling your herd in a corrective mating program. Most AI studs and breed associations will evaluate your cows and subsequently mate them to the group of bulls that you've chosen. You might improve functional type traits in your herd, and you'll definitely do a better job of managing inbreeding.
4. Have fun, and look forward to doing this again in three months.