

Genomics and Beyond Reflections

By David Selner

The National Genetic Workshop - Genomics and Beyond was a great place to exchange thoughts and ideas for many segments of the genetic industry. I was especially pleased with the large turnout of dairy producers that attended and added their comments to the discussion on the future direction of the U.S. genetic industry. The committee organizers did a great job of bringing in prominent experts in certain new areas of research but also brought in participants that are actively involved in producing milk. By now you have seen many of the reports on websites or blogs from the conference. The possibility of new emphasis on traits like cow size, polled, hoof health, increased immunity, feed efficiency, methane production and genetic diversity were all discussed. Many of these may become very important for the dairy industry of tomorrow.

However the key to genetic progress is how the industry evolves to meet the new demands for a new generation of trait evaluations. The need for real on farm data to be the basis for all genomic evaluations was again stated emphatically. Genomic predictions will not work unless we have the phenotypic data to back up the genetic evaluations. The challenge for the future is how the U.S. maintains a viable industry database of real world information.

What needs to happen next is a series of action plans to make some of these grand ideas actually become reality. The conference did not provide a lot of discussion as to how the future U.S. data systems should be structured. There will be a central data base controlled by the Council on Dairy Cattle Breeding but how are other organizations like AIPL or other research centers going to be involved? Is there a place for on farm data recording systems to be incorporated?

Speaking broadly on health trait information there was no conference consensus as to how real on farm data should be collected. The realization that there is no standardized method to record health data at this time is obvious to most data observers. The industry could have a discussion on standardization protocol for the next five years but if no leadership or urgency is shown on this problem there will be little progress. I submit that unless dairymen take an active leadership role and demand that the organizations that serve them take this challenge seriously, little progress will happen in the short term. Recent history indicates that when dairymen demanded calving ease information or somatic cell scores those suddenly became high priority and genetic evaluations quickly became industry norms. I believe that dairymen will again have to lead this effort.

Another non-consensus issue of the conference seemed to be the direction of combined total economic indexes to meet the diverse demands of U.S. dairymen. There were several discussions as to why the Holstein Association should change

the TPI formula to favor smaller cows, more production or potential different traits like feed efficiency. Rumors have surfaced that AIPL is going to be making changes to the Net Merit formula in the future and that there would be greater emphasis on some traits and less on others. So the industry has already started this conversation. My observation is that we probably place too much marketing emphasis on the high end of these values and less on their suitability as industry breeding improvement goals. The concern among A.I. studs is how their bulls are going to rank and breeders want to know how it will affect their cow family's popularity for sales. The main goal of most genetic marketers is the selling of high value genetics based on a single number or ranking. Then how the ranking system is determined is the key to their successful marketing.

I believe that U.S. dairymen are smart enough that they do not have to be protected from options of multiple information values. The use of a single index is great for marketers but is it really necessary for today's dairymen? With today's computers the myriad of genetic data can be easily sorted however the dairyman desires. Does the U.S. need a single national breeding goal like some countries or can it allow various dairymen to chart their own course of genetic improvement? Why don't we have more than one TPI value? Why isn't Net Merit significantly different than TPI? If cow size and other type traits are very important to profitability why not have a separate component for body traits and size in the Net Merit formula? Take the type trait emphasis out of Productive Life and allocate it to another type trait value. Then Productive Life will be a clean measure of living or dying and the extreme sires, which do not fit the current index model for PL, can be more easily identified. How much more emphasis should be placed on stillbirth which is still a Holstein breed problem? I believe that allowing these types of choices for dairymen will create a rather robust genetics industry that would be less concerned about inbreeding because the breeding goal would not be just a single index.

I also believe that genomic information will have additional roles in the future. The research presented at the conference by Dr. DeVries dealt with the economics of using genomics to select the best animals or the worst animals in your herd for different types of management or culling decisions. These studies showed that either method could be economically justified depending on your preferences. What has not been currently discussed is the use of genomics in everyday cow management. Should you use sexed semen on your most genetically fertile females? Should you place those animals most susceptible to locomotion problems, hoof disease or injury in special housing units with extra foot baths? Should you dry treat all cows most likely to be susceptible to mastitis? There could be many more potential uses.

This latest genetic conference was a great place to allow your mind to explore the potential of new tools for the breeding industry. Now it is up to all of us to insure that direct actions are taken to make these dreams a reality.