

aAa Farmers Club Meeting - November 26, 2011, Swifterbant, the Netherlands

Bill Weeks, the father of aAa, grew up in Vermont about 1,000 miles east of Illinois. But he started his cattle analysis in Northern Illinois in 1950. While doing analysis, he also assisted a wealthy inventor Mr. Roy Champagne select foundation for his Chambric herd. He later, in 1957, became herd manager at Chambric while still doing analysis. So for about 10 years I lived in the same general area as Bill and through Holstein activities I had quite regular contact with him.

I feel very privileged to have known Bill Weeks since 1956 and also to know most of his associates in America. When I first met him I was a new employee of about 3 weeks at Ravenglen Farm. I like to kid that I was the man in charge because I was in charge of throwing down silage, sweeping the barn floors, cleaning out gutters and box pens. In other words I was new there and low man on the crew.

Bill Weeks came to analyze and I was sure curious to know what this was all about. I was allowed to shirk some of my chores to watch. I didn't really grasp how uncommon Bill was until the 64 cows were analyzed and we went into the calf barn to look at calves. At that time Ravenglen was using mainly 3 bulls. The manager Earl Moeller (who later in life became an aAa analyzer) would tell Bill the sire of a calf and Bill would tell us the dam or we would name the dam and he would pick the sire. We did 15 calves like this and he was correct on 12. The other 3 he said he could not identify the dam when he was told the sire but he never made one mistake. I thought he must be a witch doctor but I have witnessed similar things so many times since that I just came to expect it from Bill. Since that time I have never missed a chance to learn from this brilliant cowman. One man said to me, "Bill has forgotten more than most of us will ever know about cows." I said you are sure wrong about that because I don't think Bill ever forgot anything.

My breeding goal at Mil-R-Mor has been the same for 50 years. We try to breed cows that will classify Excellent and produce 200,000 lbs. of 4% milk because we believe that kind of a cow is a "labor efficient, profitable cow." If you think about it that is exactly what aAa is trying to do. "Breed a labor efficient, profitable cow." That makes aAa one of the most useful tools available to me to reach my goal. However, I have to admit, I have never had my herd analyzed by an official aAa analyzer. People ask me often, "Why don't you use aAa?" My answer is I use it every day and every time I make a mating. Now that I am 78 years old I think I may start having my herd officially analyzed because I find I am getting lazier and I don't spend nearly enough time mating my cows.

We have found at Mil-R-Mor that cattle resulting from careful matings will routinely exceed their predicted pedigree index level. This tells me index may be useful but a correct mating is more useful. I have never had any training as an analyzer but I think I understand it well enough that I have had excellent results at home. But I would never feel qualified to do any other cattle.

When I was asked to speak to this group my first thoughts were to talk about the value of sound matings. Then it occurred to me I would be talking to a group of aAa supporters and users who are already mating experts and for me to tell them how to do it would be like the student instructing the teacher. So today I will confine most of my talk to the direction I think dairy cows should move and some ways to do it. But before I get to that I will briefly comment on my mating philosophy. Good type and will to milk are both essential but type is

most important. It is easy to breed will to milk into a frail cow with bad legs and a deep udder but she won't survive long enough to harvest much return. The cow we need to breed is the regular calving, high producing mature cow. That's hard work and we must develop a cow suited to do it efficiently. That's a balanced cow, a free-moving, aggressive, athletic cow that has the strength and agility to cope with her surroundings without stress or injury.

It is important to analyze each individual and make matings that keep them moving in the direction we want. I find studying any previous offspring helps to fine-tune the mating. Some cows will routinely transmit things you can't see in the cow herself but if you study the pedigree you can usually see where it comes from and correct for it.

Today I will often be referring to the added profit from a regular calving, good producing mature cow. Of course I realize that all of you good cowmen know why she is so much more profitable but I want to document it one more time.

I have calculated income for a hypothetical cow that calves at two years, produces 25,000 pounds of milk, and follows the normal ME curve through five annual lactations. The chart below shows the profit at each birthday starting at 3 years when she has completed her first lactation. I have used my current approximate prices. I say approximate because feed and milk prices jump around so fast one can never nail down an exact figure.

1. Cost to produce milk \$16/cwt (€25/100kg)
2. Milk price \$22/cwt (€35/100kg)
3. Cost to raise a replacement heifer \$1800 (€1300)

Age	Production in the previous year (lbs)	Gross Value(USD)	Net value less cost of production (USD)	Days since birth	Total net income since birth	Net income/day of life	Annual net income/year of life since birth
3	25000	5500	1500	1095	1500	1.37	500
4	26700	5874	1602	1460	3102	2.12	776
5	28475	6265	1709	1825	4811	2.64	962
6	30148	6633	1809	2190	6620	3.02	1103
7	29940	6587	1796	2555	8416	3.29	1202

When this chart is continued to ten lactations, the net income per day of life continues to increase each lactation. This is one of those rare things where a little is good and a lot more is a lot better. Stop at whatever point you wish and it is better than any previous point. Below is a chart that features the real value of multi-lactation cows. It shows production income less \$1,800 rearing costs.

	Total Net Income Each Previous Lactation	Total net income less \$1800 rearing costs
3 years	1,500	-300
4 years	1,602	1,302
5 years	1,709	1,709
6 years	1,809	1,809
7 years	1,796	1,796

Figures from the above chart shows that if you milked 100 1st and 2nd lactation cows your annual net profit would be \$50,100. If you milked 100 3rd, 4th, and 5th lactation cows, your annual net profit would be \$177,100. That's \$127,000 more net profit per year or \$1,270 more net profit per cow. That's nearly \$10,600 more net income per month. I hope this chart has established the tremendous advantage of a 5 or more lactation cow over a two-lactation cow.

When we mate our cows the goal is almost always to produce a calf that will develop into a high-producing, regular calving mature cow.

If we don't select that kind of a cow today for our foundation female, bull mother, and ET donor, can we reasonably expect to produce that kind of profitable cow tomorrow?

Genomics is the current buzz-word in the dairy world. It is an amazing technology and I believe we should all take full advantage of it. But perhaps just as important we should not let genomics take advantage of us. Genomics is a wonderful new tool, but it is a tool and not the finished product. We should not get so excited that we let genomic numbers determine the absolute value of our cattle. That can only be accurately determined after actual performance. We of course should use genomics among other tools to help us breed the high-profit cow.

It is a regrettable detriment to our breed that once again, sharp marketers have successfully transferred the value of cattle from the actual proven high-performance animals to the high predicted index. This encourages marketers to just mate high-index sires with high-index females regardless of the balance or correctness of the mating. These kinds of matings will of course produce high-index offspring that currently can be sold very profitably while young and untested, but in most cases they will not perform at their high predicted level because of some weakness not considered in the mating choice.

If you question this last line, just try to name the very top performance mature cows or bulls in the last three decades that descend from the very top index matings of their day. I think you will have a headache before you get to ten. If we are paying attention to results, this surely tells us that just adding the numbers doesn't make the best cows.

Does that make indexes and genomics bad? Of course not! Indexes and genomics are probably the two best breeding tools we have had since production testing and classification. But none of those tools are a finished product; they are only tools to help us make a better finished product. These tools are all wonderful building material but neither one of them individually nor are all of them together the finished product. Putting the most value on the tools and not the finished product is not the most productive way to improve the breed.

For the good of the breed and the breeders, I think we must try to steer the industry to get the most value on the best finished product, the actual high performance animals. If the value is only determined by the performance of the resulting offspring, then this will encourage thoughtful, intelligent matings that build a better and better breed. This challenges and encourages breeders to use all the programs (including genomics) as well as their own experience to breed a high performance animal that will be valued by her proven merit and not just a prediction. When the best actual performance animals in the breed don't have higher value than the predicted high performance animal, then that is the same as choosing the winner before the race begins, which gives less incentive to try.

“Mendel’s Law” states that like begets like three times out of four. Mendel proved that many years ago and it remains true today.

That’s where extended pedigrees enter the picture. They can tell us what the ancestors were like and what the offspring from that pedigree may be like three times out of four. Breed associations have existed for many years because their very useful main purpose is to provide breeders with complete, unbiased records that allow us to make informed breeding decisions. We should make full use of pedigrees.

When I was a kid, a pedigree was our only selection tool and A.I. was not available. The good breeders all had the same common sense selection criteria for bull mothers. The 3 nearest dams should all have 4 or more records that increased each year. This showed calving interval and if records increased each year that showed they were trouble free, healthy cows. Care was always taken to select a bull that had strengths to compliment the most common weakness in the herd. Without A.I. it was impossible to mate each cow. So it was kind of like aAa on a herd basis rather than individual.

A quick look at a complete extended pedigree tells most of what we need to know to make a good decision. It tells wear-ability and reproductive level by the number of lactations and calving intervals. It tells producing ability, component levels, and type traits. If the lactations are uniform and increase the expected ME amount the cows were very likely healthy, trouble-free cows and one can reasonably expect them to transmit that.

We know using extended pedigrees works well so I am not willing yet to throw away what we have learned so far. If the pedigree contains the regular calving, high producing mature cows, I want more just like, and the genomics look good (and I can see why the genomics look good) then I have faith I will get good results. If the genomics look good but the pedigree is lacking proven performance or has questionable performance, I treat it as suspect and put it on the wait and see list.

I am not saying the genomics is wrong, but if the pedigree doesn’t contain the kind of cows I want I don’t yet see reason to believe high genomic numbers will fix that.

Remember Mendel’s law. Three times out of four you will likely get the average of the pedigree but one time may be different. Here’s where genomics can really help. It can hopefully tell whether the animal is better or worse than the average of the pedigree and perhaps even how much better or worse. It is just as important to know the worst as it is the best one. If you are lucky this 4th one will be better than average. If you are very, very lucky the 4th one may have inherited an unusually high percent of the best genes from the pedigree and the animal will perform even better than the pedigree indicates.

Time will tell if in fact genomics can sort that great one from the masses. I really do think the potential may be there to do it because genomics looks at what genes the animal actually inherited versus pedigree index which could only tell what genes the animal may inherit on average. Genomic indexes are so much more comprehensive than pedigree index and much more individualized.

In the past with a large group of animals, pedigree index predicted the average fairly close but it could not identify that individual outlier. We all hope genomics will be able to do that but it is not a proven fact yet.

So what do we do right now?

My plan is to be cautious. I will continue to select the pedigrees I want first and then fine-tune that with genomics.

As breeders we must keep our eye on the goal and that's hard to do because there are so many distractions along the way. It is important to remember that the goal is still a regular-calving, high-producing mature cow. Although almost all breeders agree on that goal, incomplete genetic rankings, current fads, and the forces of marketing constantly bend our thinking which causes us to often compromise our daily choices of sires and foundation females.

I don't want to be accused of putting down the value of genomics. I really believe it will likely prove to be the most useful tool ever devised to assist us to breed better cattle. But it is a tool to help us get enhanced performance and the proven performance animal is the real goal that the value should be on and not the prediction. The genomic index is wonderful but how our industry is using it right now is shameful.

Most of you older folks will remember the index mania of the 70's and 80's. The race for high production index was so intense that all else was forsaken. Two year old production did go up, but reproduction, mobility, longevity, lifetime profitability, and immune systems all went backwards fast. The sale value of our cattle was mainly determined by index and genetic trends. Folks always had to get the newest. The real profitable cows like everybody's favorite, the grand old EX 10-year old with over 200,000 lbs. milk lifetime was considered a genetic fossil and sold by the pound.

Ladies and gentlemen! Will history repeat itself in only two decades? High genomic indexes sell crazy high, while good, solid pedigrees full of multiple lactation cows with high type (the kind everyone is trying to breed for) sell for a fraction of the young, unproven but high-genomic animals.

Let's not fall into the same trap we did in the 70's and 80's. Slow down and do it right. Use the tools to breed the great cows. Give them time to prove themselves and then select the best for foundation mothers. Racing for the newest, unproven animal is about like playing the lottery, once in a while there is a winner but oh so many losers.

Although I am obviously concerned about the current animal value being too weighted toward genomic level, I don't foresee the breed deterioration that happened in the 70's and 80's. Today our indexes are so much broader-based. Current indexes have added productive life, somatic cell score, daughter pregnancy rate, daughter calving ease, daughter stillbirth and mobility. Indexes are now calculated with "the animal model" which considers all closely-related family members such as dam, sire, sisters, brothers, daughters and sons.

All of these above measures have been implemented since the very late 80's. They should prevent any present-day serious trait deterioration in the breed, and congratulations to our geneticists for seeing the light and fixing that.

The down side will come from much-lowered value on cows with pedigrees full of high-profit mature cows with moderate genomics. This lowers good breeders' net worth drastically. If there is none or small reward for breeding high-profit mature cows, breeders may forsake that endeavor and this would be a lasting detriment to breed progress.

Although present-day genomics is not yet a solidly proven technology we certainly know enough already to realize the future contribution from genomics could be absolutely profound. The possibility is there to select for so many traits that benefit breeders like the absence or presence of disease-prone genes, production, component levels, type traits, fertility traits, etc. I take my hat off to the researchers who have and are continuing to develop this astounding technology. Genomics can be revolutionary and it is here to stay. Fighting it is short-sighted. We should direct its use to help us and not hurt us in our efforts to make more profit from dairy cows.

Because we have this technology available, and because I sincerely believe that a regular calving, good producing mature cow is absolutely the most profitable cow. I have asked the Holstein Association USA to consider developing a genomic base for that kind of cow. I say why not go directly for the real thing. Following are my suggestions of how to proceed and why:

Establishing a Genomic Base for a Profitable Mature Cow

1. Have statisticians establish the probable number of cows needed to establish a genomic base for 6 or more lactation cows with good production.
2. Sort the breed for 6 or more lactation cows
3. From the above group sort for calving interval for first six lactations. Also sort for pounds of milk or CFP per day of life since birth for first six lactations.
4. Sort the above list to reach the number needed to establish a genomic base from the best combination of calving interval and pounds of production per day of life.
5. If there are a large number of top-end cows available, further sorts could be made
 - a. For second-generation 6 lactation cows.
 - b. For highest lifetime production.
6. When the final list is established, the Holstein Association should fund a genomic research test on each cow to establish a genomic base for high-profit mature cows.
7. When a base has been established, the Holstein Association could then make a report available to each research cow owner for a fee if the owner desires. This could help fund some of the research.

Why?

1. Selecting for a six or more lactation cow is an attempt to raise reproductive efficiency and profitability in the breed and hopefully to identify a population of the breed that is very profitable but is being missed by our current measures.
2. It seems reasonable to believe that multi-lactation cows have better immune systems. That fact allows them to have fewer health problems. This in turn means less veterinary expense and longer, more trouble-free life.
3. Multi-lactation cows can only have multi lactations if they breed regularly. This brings savings on semen costs, heat detection, estrous synchronization or heat initiating programs, less handling of cows and shorter days open.
4. Mature cows produce more milk than first or second lactation cows.
5. First lactation cows are basically a net zero profit producer in the herd. When all costs are calculated for a first lactation heifer, she will have to produce very well with a good milk price if she can break even with her raising costs plus lactation production costs. Add together the heifer sale value at birth, feed, bedding, and facilities, veterinary, insurance, interest, death losses, and labor, plus lactation costs and

you are lucky to break even by the date of her second calving. That means the higher the percent of first lactation cows in your herd, the lower the percent of cows actually making a profit. A great reason to select for high-profit, multi-lactation cows.

6. To sort for profitable production, it is a must to calculate pounds of milk per day of life since birth and not from two years old. Calculating from two years old does nothing to identify the profitable, regular calving cow because a two year old that produces one lactation of 25,000 lbs. of milk will have the same pounds per day since two years as a cow that does it 6 or more times. If calculated from birth, a 25,000-lb. two year old will have about 23 pounds per day of life and a six-lactation cow that averages 25,000 lbs. per year will average over 51 lbs. per day, which is a major profit advantage.

Do not let this program interfere with any current genetic programs. We should not throw away anything we have learned so far. It is important to keep this list separate from our current genetic lists at least until we can see how it may fit. It is not my intent that this list should replace anything we use now. Instead, it will give breeders another tool to help identify a more profitable mature cow.

The goal for over 100 years has been and continues to be to breed future generations of cows that are progressively more profitable for commercial milk production than the cows we have today. If breeders don't succeed at that, the genetics we have for sale will not benefit the potential buyer and that market will evaporate.

We are all well-aware that the most profitable cow is a high producer that calves regularly and stays useful to an old age. But there are so many distractions that look easier and faster. There are so few AI bulls with those great old, high-profit dams to choose from that it is really difficult to remain focused on the goal.

Let's just think about it. The kind of cow we milk and sell tomorrow will be largely determined by the ancestors we chose for her today. Are we choosing the most profitable cows as bull mothers and ET donors, or are we letting fads and marketing impede us in our efforts to breed that more profitable cow?

Remember "Mendel's Law"! Are the nearest three dams of the bulls and foundation females the kind we want more just like? When AI bulls get their first proof, their dam is usually at least seven years old. Are we usually shown a nice new picture of that dam with documentation of her calving and production records? Almost never! Is that because she did not develop into a fine mature cow? Are we then asked to buy semen on a prediction that the bull's daughters will be different than his dam? Folks, it is time to get real and measure results, not predictions.

Our past index selected for young cows with high production and good udders. Wow, did it ever work well for udders and early life production! The production and udders of our young cows today are giant leaps ahead of those when indexing started. What a real pity we did not also think to include reproduction and wear-ability so good udders and production would translate into lifetime profit. Index worked so well for early life production and udders, just think where our breed might be today if we had set up indexes for reproduction and wear-ability from the very start.

We hear arguments that selecting for many traits slows improvement for the most important ones. But what are the most important traits? The high-producing two-year-old with the nice udder that doesn't breed on time or wears out at a young age will create a high index for her sire but only mediocre profit for her owner.

High per day of life income from birth is what the owner's needs and wants but doesn't get from short-lived cows. The high index on the cow's sire doesn't make a cent for the dairyman.

Well what should we do? I believe we *should* do something that probably isn't ever going to happen. We should be selecting our AI bulls from the highest genomic index cows with five lactations or more. By that time, our available information is so much more accurate and we are actually starting with what we want: a top-producing, regular calving mature cow. She is the real thing with proven performance and genomic index.

Oh my! Oh my! We can hear the screams from geneticists that we are giving up so much genetic trend. But folks, that reasoning is simply short-sighted baloney. This is 2011 and five years ago was 2006. You know what, our genetics in 2006 were not so bad and we would only lose 5 years of genetic trend this once and never again. We would then move ahead each year just like we do now. Consider the tremendous gain from more accurate selections because of higher reliability. In a short time, every bull dam in the pedigree will be a high producing, mature cow. That has to concentrate these kinds of genetics favorably throughout the industry.

Folks! Think about it. After five lactations and with good genomics, the cow has proven she can do it and her genomics say she has the right genes to pass it on. It looks to me like a blueprint for success, to improving fertility, health, production and lifetime profit.

The correct goal for the highest daily profit, yearly profit or lifetime profit cow is not the high-yielding cow with shorter useful life. The cow that really rings the cash register and delivers the best number to the bottom line is the cow that develops into a high performance mature cow with type that allows her to be usable for years.

If we don't select that kind of cow today for our foundation female, bull mother and ET donor, can we reasonably expect to produce that kind of profitable cow for tomorrow?