Why Did You Do That??

Or

Why do recommendations Fail???

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In frequent conversations with dairy producers Extension Specialists and County Faculty are confronted with statements like; "That works for my neighbor but it doesn't work for me" or "I tried that and it seemed to work at first but it doesn't work now" or "It doesn't work but the salesman showed me University data that showed that it is effective".

While it is often difficult to come up with the exact answer for the dilemmas there are a few things that we need to look at as possible reasons.
They are

1. **Lack of Appreciation For Normal Variation**
2. **Methods Used In Gathering Background Information**
3. **Inadequate records on the farm**
4. **Selective (Unethical) Use of Data**

The one thing in common in biological systems is that there is a lot of normal variation. In our genetic selection programs we make good use of that phenomenon. We recognize that if you were able to mate one sire with the same female to produce a dozen heifer calves they would all look different and would have very different levels of production.

Let me refer to a baseball example as an illustration for this paper. Let's take a hitter that has a season average of .333. We would recognize that is very good. However there will be days during that season where he will have no hits in four times at bat and others where he will go four for four. That is normal. We will come back to that example.

Another major factor that affects the reliability of the recommendation is manner in which we obtained the data used to make the recommendation. Here is a list of a few of them with the east reliable given first.

- ✓ **Testimonials**
- ✓ **Observation**
- ✓ **Surveys**
- ✓ **Retrospective analysis**
- ✓ **Initiate change (no controls)**
- ✓ **Pilot studies**
- ✓ **Large well designed and conducted experiments**

Testimonials

Quoting a satisfied customer is the favorite tool used by the door to door salesman “my neighbor tried it and she thinks it’s great” .If companies need to resort to testimonials then the product has questionable value or has not been tested.

Observation

Unfortunately this is the position that a dairyman places his veterinarian in. A cow is sick and you want her treated now before she dies. Often he does not have the luxury of taking samples and sending them to the laboratory for diagnosis. He needs to base his decision on what he sees and on the information you provide. An experienced veterinarian will be right most of the time, but the risk of a mistake and therefore a treatment failure is very real. Using the baseball analogy, it would be like going to a game and see our .333 hitter go 0-4. Based on that one observation you would have to surmise that he is a very poor hitter.

Surveys and retrospective analysis

These somewhat similar techniques are ones that we use often to gain information because they are relatively quick and inexpensive to do. The risk in using this information is that one is inclined to want to infer a cause and effect relationship. As an example, recently authors did a survey of a large number of dairies in Holland. For the survey they listed a large number of management practices and farm situations and at the same time listed the various herd health problems on the farms. To analyze the data they would identify a disease like mastitis and look at which management practices were used on farms with low levels of somatic cells and compared that to the farms with a high level of somatic cells. In that study they found that in the herds with the highest somatic cell counts the owner knew very few of his cows by name and the walls of the milking parlor were dirty when compared to the herds with low cell counts. In this example it is easy to see that even though there appears to be a relationship between the two management practices listed and the somatic cell count in the herd. Dirty parlor walls do not affect somatic cell counts. A better explanation is that dairymen who do not keep the milking parlor walls clean skip other management factors, like milking clean dry udders and teat dipping which do affect somatic cell counts. So if we take this example farther, if a consultant used this data literally in making recommendation a to a dairyman who had a high cell count, he would suggest cleaning thee parlor walls and start to learn the names of all the cows. I think we all recognize that if the dairyman followed those instructions, 6 months later the cell count in his herd would not have improved and he would be asking “Why do recommendations fail”? Now in this example the fallacy is rather obvious. Unfortunately many others are not as obvious. Take as an example the use of rubber gloves in milking. That sounds like a good idea

and if we did a survey the results would probably say that if a dairymen uses rubber gloves and sanitizes them regularly during milking he will reduce mastitis in the herd. Yet in two large field studies it was demonstrated that the use of rubber gloves has no measurable value in reducing mastitis. So even though it sounds like a great idea, if one recommended using rubber gloves to reduce mastitis we would have another situation where the recommendation failed.

Initiate change-no controls

A common catch phrase, "try my product for 10 days and if you are not pleased we will refund you money". Sounds good but before you buy think back to normal variation and ask yourself the question "when am I interested in trying something new"? Let's say that the number of cows in the pot herd has been up lately (normal variation). A new feed supplement that is supposed to decrease mastitis is advertised. Your normal reaction is to give it a try. Based on what we know about normal variation, what will happen if you start using the product when the herd mastitis is high? The concept of normal variations suggests that the number of cows in the pot herd will go down no matter what you do. You are hooked because it looks like the product worked, but then lo and behold some time later you will be back to the same old problem. Lesson to be learned, if you can't try the product on a portion of the herd and keep the remainder of the herd as controls you are best off not to use the product at all. Yes even if it is free because you may be led to believe that something is working when it really is not.

Pilot studies

This method of data collection suffers from some of the same limitations as non controlled studies. Pilot studies are usually small controlled studies to give something a try on a small scale. The downside of using that approach is that you may discard a product or technique because you were unable to demonstrate a significant change simply because of limited numbers. Back to baseball, if you went to the game where the hitter had no hits you would reach the conclusion that he is no good when in fact he is a good hitter.

Well designed studies

While this is the most reliable source for gaining information it too has some limitations. Many well designed studies are carried out under very closely controlled conditions that do not exist under normal commercial conditions. The study may show that the technique works under those conditions but may fail in the field. A possible example. Recently there has been a lot of publicity on the data that shows that milking cows 6 times a day for the first few weeks of lactation will increase production for the whole lactation. There is little doubt that the technique works, however as we transfer that to the commercial world we may have problems. In large herds it is fairly common for cows to be in the

holding area and parlor for one and a half hours at each milking. Going to 6 milkings per day means that the animals could be in the parlor for 9 hours a day. What does that do to the amount of time spent eating? What will all of that extra standing time do to foot problems? It is possible that these negative effects, which may not have been present in the original work, could wipe all of the beneficial effects attributed to more frequent milking. Another factor to keep in mind is that when scientists analyze data they are looking for differences that provide a 95% confidence level that the differences that appear are real. However what that means is that in 5 out of 100 cases the decision made will be wrong. They will have accepted that something works when it really doesn't. And that leads us to the final reason why recommendations fail and that is the.

Unethical or deceptive use of data

If one were to take a product that had no value in increasing milk production and tested it in 100 trials, chances are that in five of those studies the normal variation would cause the differences to be statistically different. Thus if I am an unethical person, I can select the result from those 5 studies and discard the results from the other 95 studies and show my potential customers that I have research data that shows that the product is effective. I can even list the names of the 5 Universities that showed that the product works. In the baseball situation that would be like selecting the number of hits per times at bat for the best month and list that as his batting average.
Unethical companies will try to get a large number of people to try their product, the normal variation will make it appear to work for some people. They can use those people to provide testimonials on how good the product is.

In summary I have tried to illustrate the importance of carefully examining the source and type of data that is being used by your consultant in making a recommendation to you.

1. **Lack of appreciation for normal variation**
2. **Methods used in gathering data**
3. **Inadequate records on the farm**
4. **Selective (unethical) use of data.**

Being diligent in examining those factors will great reduce the number of times that you will purchase a product or initiate a management change that results in failure. If you are curious to the title "Why did you do that? The answer is that is what your wife asks you after you spent $200,000 on new milking equipment and there is no improvement in milking efficiency or mastitis incidence.