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USING RECORDS TO EVALUATE PRODUCTION

Allen Young
Dairy Extension Specialist
Utah State University, Logan, Utah

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Evaluating production is necessary, but sometimes hard, because everyone has a different idea of what constitutes good milk yield. Everyone has different likes, dislikes, and goals. For me it becomes a problem when I try to tell someone their milk production is too low without arousing hard feelings that are counterproductive to the discussion. However, there are certain things I look at when evaluating someone's production that I feel are important. These areas are:

1. Where are you and where do you want to be?

It is important to know where your herd has been (historical), where you want to go (goals), and then where are you at now. If you are at 60 lbs and want to be at 90 lbs in the next month or two, there are unrealistic expectations/goals involved. Determine how your 1st, 2nd, or 3+ lactation cows are producing in relation to each other because then you can start to determine if there are management practices holding you back from reaching your goals.

2. The demographics of your herd

Look at the percent of 1st, 2nd, and 3+ cows in the herd. If a large percent of the herd are first lactation cows, then you might expect the herd average milk to be lower because of the influence age and maturity have on production.

3. Milk fat percent

I don't know why the usefulness of milk fat and protein went "out of style". I constantly hear dairy farmers say they don't need them. They say that milk weights and somatic cell counts are the only important information that they need. I disagree. Milk component percentages are very sensitive indicators of changes and/or problems in feeding and health.

The level of fat in milk is primarily an indicator of acetic acid formed in the rumen. The primary source is from fiber (found mainly in forages). Supplemental dietary fat can also change milk fat composition. It can also be an indication of weight loss or gain by the dairy cow. Excessively low or high milk fat percent can indicate altered rumen function that can be a warning of serious health problems developing in the cow.

Reduced milk fat %, probably due to decreased fiber intake, can lead to such health problems as acidosis and laminitis. If your milk fat % is less than 3.0 % (Holsteins), or heading toward that number, then you can't afford to sit by and watch. You need to determine the cause of the problem. Many times the problem can be traced back to forage which has been chopped or

blended too fine, sorting by the cows, or poor hay that the cows won't eat. The worst acidosis and laminitis case I have ever seen was one where the farmer was feeding severely rain damaged hay in the feed bunk and grain through the computer feeder. The cows were eating the grain, but almost totally ignoring the hay. In addition to watching milk fat percent, abnormal fat:protein ratio is another good indication that you are heading for a problem. Fat:Protein inversion (i.e. protein level equal to or greater than fat level) can indicate that the rumen is not functioning properly and can be an early warning system which allows you to make corrections before major damage is done. Herds in which I have seen acidosis and laminitis have had a significant number of cows with inversions and changes in the Fat:Protein ratio.

Lactation curves for milk components (fat and protein) are normally the inverse of the milk lactation curves. This means that component curves decrease to 50 - 60 days in milk then begin to increase again as days in milk increases. Milk curves peak at about the same time as component curves reach their lowest point.

I have been told that there are problems with the milk fat percent from DHIA and that it is of no use because it is grossly different from the milk fat percent recorded by the milk plant. If this is the case it is usually due to problems in sample collection and/or handling. This could be due to the DHIA Technician or the truck driver from the processing plant. If the DHIA test and milk plant values are not reasonably close (within 0.3%), <u>it is the responsibility of the dairy producer to make sure that the discrepancies between the two are worked out</u>. Not making an effort to correct problems with sample collection is a major management short-coming and wastes your money.

4. Milk protein percent

I doubt that most people complain about milk protein levels being too high, but they are definitely missing out on income if the protein level is too low. Milk protein % for Holstein cows below 3.0% is a yellow light and below 2.8% is a red light. If your milk protein percent is in this range, it is probably due to one of two factors. The first is a ration protein level that is too low. For the vast majority of producers, that is <u>not</u> a likely scenario. The second is that the level of energy in the ration is too low. This is a more likely probability.

A good "one-two punch" when monitoring ration protein levels is to use milk protein % in conjunction with the Milk Urea Nitrogen test (MUN). The MUN test is correlated with the amount of protein in the ration that is not utilized by the cow and is excreted as waste in the urine. It can help you determine if the ration is correctly balanced for soluble carbohydrates and protein or if unutilized protein is being fed. Economically, feeding excess protein is costly from a nutrition and environmental standpoint. MUN concentrations between 12 and 16 mg/dl are suggested with 13 mg/dl a good goal. If the MUN is high and milk protein percent is below 3.2% for Holstein cows, you probably have room for optimizing your ration. In the future, MUN will become even more important in providing a benchmark for nutrition and waste management.

5. Average days in milk (DIM)

The industry average is over 200 DIM and has steadily increased until the last three years. This increase in DIM is primarily due to poor reproduction efficiency. High DIM will put a lid on milk production, because as DIM increases you have a greater percent of your herd in late lactation. As stage of lactation increases, milk production decreases. Dairy producers with long DIM, who want to increase daily milk production per cow, become frustrated when little change is made. When comparing milk production between lactation groups or strings, MAKE SURE you correct milk per day to reflect differences due to DIM. You do this by using the persistency benchmarks listed in Section 7. For example, ignoring DIM, the difference in production between a 1st lactation cow producing 60 lbs milk (240 DIM) and a 3+ lactation cow producing 70 lbs of milk (160 DIM) may look like normal production differences. However, after correcting

for DIM, there is less difference between the two, not something you want to see ((240 DIM – 160 DIM) x 0.057 (From Sec. 7: 1.7 lb decrease/30 day = 0.057 lb/day) = 4.6 lb difference. Add 4.6 lb correction plus 60 lb milk = 65.4 lb corrected milk for 1st lactation cows compared to 70 lb milk for 3+ lactation cows).

6. Peak milk and DIM at peak

Peak milk is an excellent way to monitor transition and early lactation management. Peak milk, as defined by DHIA, is the highest level of milk a cow produces within the first 90 days of lactation or DIM. In a normal lactation curve, milk increases to some peak level, on average about 56 DIM, and then gradually decreases to the end of lactation (the rate of decrease is called persistency). The relationship between peak production and 305-ME milk production is positive (Figure 1). For dairies in Utah, the correlation is 0.96; 1.0 would be a perfect correlation.

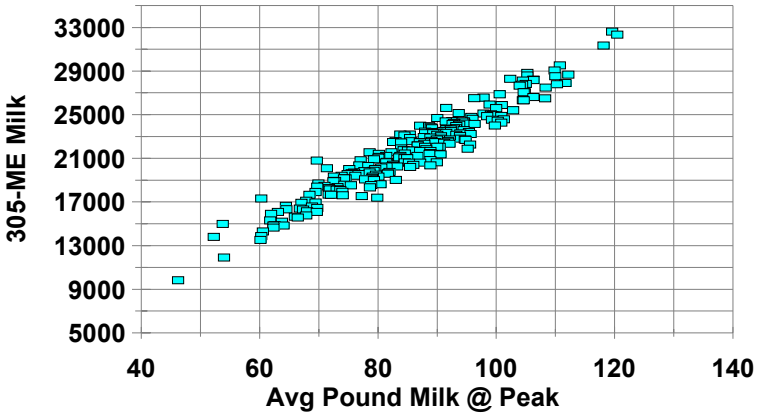

Figure 1. Average Pounds of Milk at Peak vs. Average 305-ME Milk for 240 Utah Herds (data obtained on 7/10/98).

Analysis of this relationship demonstrates that 1 extra pound of milk at peak is equal to approximately 273 pounds of 305-ME milk or 239 pounds of Actual 305 Milk over a lactation. This means that if you could increase the level of peak milk by 1 pound it would translate into an extra $2868 for a 100-cow herd ($12/cwt milk). I analyzed the records of one dairy where peak milk had decreased over a 6-month period by an average of 12 pounds of milk per cow. Using $12/cwt milk, a 100-cow herd would lose $34,416 in milk sales as a minimum if the problem persists for the whole lactation. I think you can see that this producer was losing a great deal of potential money and didn't even know it.

Every year I run reports from DHI-Provo that list peak milk by production and lactation number. It is important to monitor peak milk every month and also by lactation number. Industry average of the ratio of 1st lactation to 2nd lactation peak milk is 77-78%. Lactation 1 to 3+ ratio is 74-75%, and lactation 2 to 3 ratio is 96-97%.

Over the past 10 years, average peak milk has gone up, and DIM at peak has also increased from about 55 - 60 DIM to about 67 DIM for 2+ lactation cows. First lactation cows have increased DIM at peak from 80 to 93. In the past, my rule-of-thumb was that herds should peak at around 55 - 60 DIM (First lactation animals will be longer as a rule). Less than this and production is compromised. However, I think that greater than this isn't bad if a producer has higher herd average milk production. Animals in these herds are probably being fed and managed better.

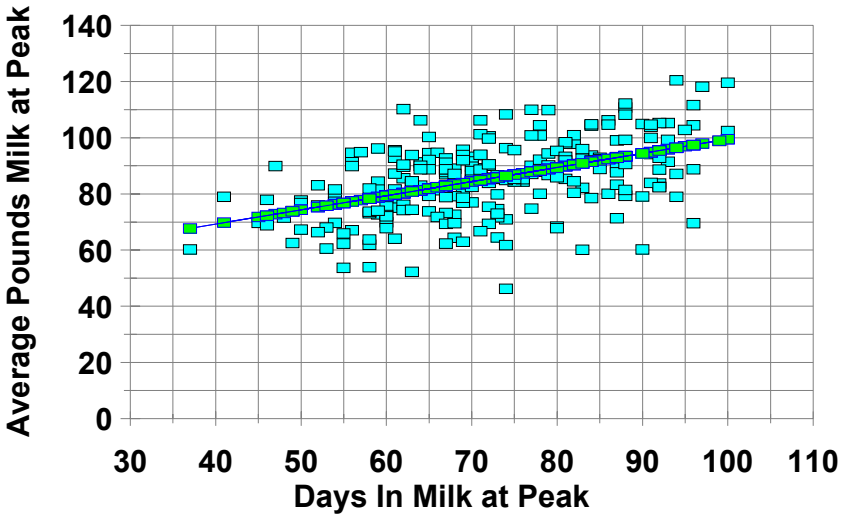

Figure 2. Days in Milk at Peak (DIMPK) versus Average Pounds of Milk at Peak for Utah dairies on DHIA (Data obtained on 7/10/98). Solid line is a regression of the data.

Figure 2 shows that as days in milk at peak (DIMPK) increased, so did the number of pounds of milk at peak. This relationship is not as clean as the plot of peak milk against average production per cow, but it is still positive. The big question is why? Should we be trying to manage our cows to peak later in lactation and thereby get more milk? The answer, I think, is a qualified NO.

What I think is happening is that you are seeing the effect, rather than the cause. I think higher producing herds are managing cows so that they produce at a higher, optimum potential amount in milk in early lactation. Higher producing herds keep going up in production longer before they peak and therefore reach peak production at a higher level, further out in lactation. Higher producing herds produced more milk within a given time period than lower producing herds. In data not shown, it appears that lower producing herds begin to plateau in production while higher producing herds are still increasing. This translates into higher producing herds producing more milk for a longer period of time than lower producing herds and longer DIMPK is the consequence. In addition, if a herd is using bST according to the label, and getting a response, they may see a second peak or a peak that extends for a longer period of time.

What does this mean for you as a dairy producer? In order to increase peak production with its subsequent increased DIMPK, you need to get your cows off and running at optimum speed. Trying to hold back a cow and get her to peak later does not work. The same things I mentioned for evaluating peak milk also apply here because if peak milk increases, then the other trend also increases. While it is difficult to know how hard to push a fresh cow so that she produces at optimum level without getting sick, my observation is that many dairies with lower average production don't have adequate nutrition in early lactation and also don't give her the opportunity to produce to her potential. Loss of milk production in early lactation cannot be gained back later. If DIM at peak has increased on your dairy without an increase in peak production, you should consider making a management change.

7. Persistency (measured by 30-Day Change in FCM)

A normal lactation curve will have milk production that increases, peaks, and then decreases. Persistency is a measure of how fast that decline takes place. Provo-DHI uses a system based on total pounds of fat-corrected milk (FCM) lost during a 30-day period (month). Average

30-day change in FCM in 2001 (Rocky Mt. DHIA), showed that first lactation cows decreased by 1.4 lbs, second lactation by 4.0 and third and greater by 4.6 lbs for an overall average of 3.2 lbs. Analysis of DHIA records by the University of Idaho has found the following average decreases in 30-day FCM: 1st lactation = 1.7 lb, 2nd lactation = 4.4 lb, and 3+ lactation = 5.9 lb. If your numbers are greater than these, then your persistency is LESS than the industry average (a problem; possibly nutrition related). If your numbers are less than these, your cows are MORE persistent than average. When I am determining the effects of extended DIM in a herd, I use 0.15 - 0.17 lb milk per day loss as a benchmark. This corresponds to a persistency of 4.5 to 5.1 lbs per 30-day month. The 30-day change in FCM for the average of all cows is 3.2 lbs and is equivalent to a decrease of about 0.11 lb per day.

If your peak yields and persistency are not where you want them, start troubleshooting by evaluating transition and early lactation rations and feeding management strategies (bunk management). In addition, you should Body Condition Score each cow and make sure they don't lose an excess amount of weight (more than 1 BCS unit) in the first 2 months of lactation; again a function of nutrition. This is a very critical time in determining how well a cow will produce over the whole lactation and the numbers to monitor it are easily obtained from monthly DHIA records.

Evaluating production is necessary. An understanding of milk yield and milk components dynamics is necessary to understand what is going on at your farm. Milk production is your primary source of income and should be maximized for your situation and goals.

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