Interpreting Your DHIA Records

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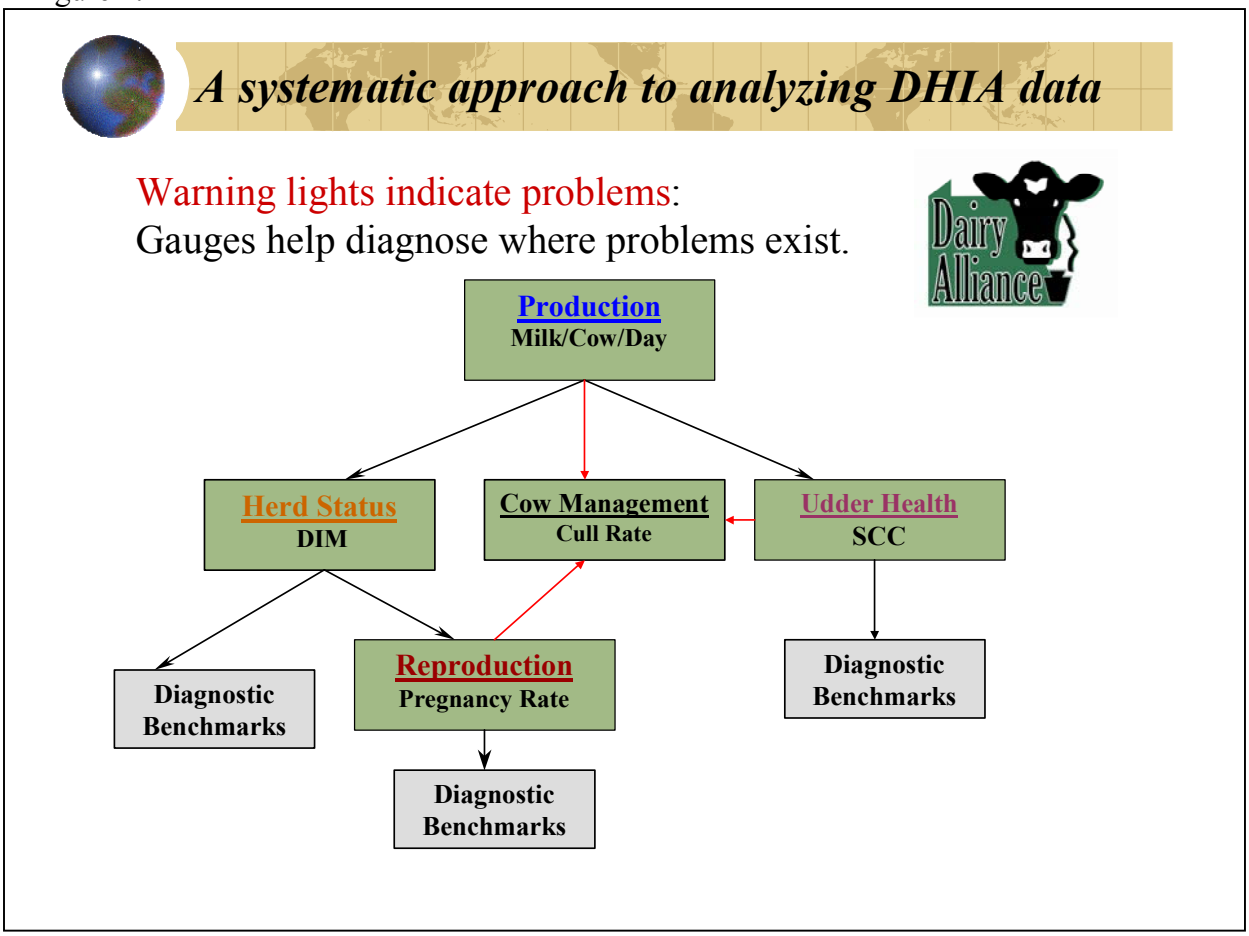
DHIA records provide an abundance of data for analyzing herd performance. However, many producers experience information overload when they receive their monthly reports. The result is information that is seldom or never used for its intended purposes, management of the dairy herd. Having a systematic approach to analyzing DHIA data can greatly improve dairy producers' understanding of dairy records and will increase their use of these records in making management decisions.

We can break DHIA data into two categories; key performance indicators and diagnostic indicators. The key performance indicators allow producers to obtain a broad overview of herd performance in several key management areas; production, lactation & repro status, repro performance, udder health and overall cow management. We can compare the KPI's to the warning light on the dashboard of a car. The can tell us something may be wrong, but they tell us little about what may be causing the problem. To determine where problems may exist in the production system, we need more detailed information. We can use diagnostic indicators to evaluate the various management areas of the overall production system. Figure 1. illustrates the systematic approach to analyzing DHIA data and lists the key performance indicators for the various management areas.

Figure 1.



What is the most important indicator of herd performance? What pays the bills? **Milk per cow per day**. Maximizing production, within the limitations of the production system, is a key to maximizing profitability. In most cases profitability increases as production increases. The cheapest milk that a producer can make is the next five to ten pounds of milk each cow produces. Since fixed costs are already covered, the only costs associated with the increased production are the marginal costs, which in most instances, is feed. Considering that a cow will produce 2.5 to 3 pounds of milk per extra pound of dry matter and most rations cost 6-7 cents per pound of dry matter, the cost of producing this marginal milk is approximately $2.50 per hundred pounds. This is significantly cheaper than the $12.00-$13.00 cost of producing the current milk. ***Herds milking twice a day and not using BST should be producing 70 pounds or more. Herd on 3X milking and BST should average 85 pounds of milk, or more, per cow per day.***

The next indicator we should look at is **days in milk**. It can provide a quick assessment of the lactation status of the herd. If an operation is not achieving the level of production the owners' desire, one must determine where, in the production system, the herd is falling short. If days in milk are within reason **(170-175 days)**, we must do more in-depth diagnoses of possible production problems revolving around milk start up, peak milk and/or persistency. However, in many cases the days in milk of a herd are much higher than the goal mentioned above. Production decreases from .15-.20 pounds of milk for every day past 150 days in lactation. Herds with average days in milk greater than 200 days are losing five to ten pounds of milk (or more) per cow per day. That translates into a considerable loss of income. In such cases, we would look at the reproductive management program of the herd, as there are usually some reproductive problems that must be addressed.

To assess the reproductive performance of a herd, we examine **pregnancy rate**. Pregnancy rate is used rather loosely and can have different meanings. In this case we are looking for the ***percent of eligible estrous cycles that resulted in a pregnancy over a given period of time***. To calculate this from DHIA records, we multiply the heat detection rate by the conception rate. We have been told, in theory, we should be shooting for a 35% conception rate. The national average is about 14 percent. In order to maintain a 13-13.5 month calving interval, which by most experts' standards is acceptable, a herd must achieve a **pregnancy rate of 22-25%**. This is probably a more realistic goal than the 35% we have traditionally considered. A pregnancy rate of 24% equates to a 60% heat detection rate and a 40% conception rate.

The next area we should evaluate is udder health, which is accomplished by examining weighted **somatic cell count**. The benchmark for this indicator is **under 200,000**. Counts higher than the recommended benchmark indicate various levels of udder infection within a certain percentage of the herd. Udder infections adversely affect the profitability of a dairy business through lost income, higher cull rates and increased veterinary expenses. Other indicators must be examined to determine where, in the production system, the infection is occurring and what the possible causes may be.

Finally, we need to evaluate the overall cow management of a dairy operation. **Cull rate** summarizes this quite nicely. All of the above factors can contribute to high cull rates. In many instances, problems in the previously mentioned areas are a secondary result of poor cow comfort. High cull rates can decrease the profitability of a dairy business

through increased overhead expenses, as the costs of raising (or acquiring) replacements are spread over fewer years. Herds with high cull rates require larger replacement herds, which can decrease profitability. **Cull rate should be 30% or less**. Even at this level cows are only in the herd and average of 3.3 years. Complete and accurate records on why cows are leaving the herd are needed to troubleshoot high cull rates.

By examining and monitoring these five key production indicators, one can get a broad overview of how a dairy herd is performing. They can also provide some hints as to what management areas of herd performance we should more closely examine. To examine a specific management area, we need a set of diagnostic indicators. We can compare these diagnostic indicators to the gauges on the dashboard of a car. They can provide more detailed information as to where the problem may exist and what the possible causes of the problem may be. For example, if milk production is lower than a recommended benchmark or a farm goal, we would look at the days-in-milk of the herd to determine if substandard production is due to production management issues or reproduction management issues. If days-in-milk are within the recommended guidelines, we would examine a set of ***production diagnostic indicators***, such as peak or summit milk, milk starts (production 1-40 DIM), peak phase milk (production 41-100 DIM), 305 mature equivalent production persistency score and component data to determine where in the production system a problem may exist. These numbers can be especially helpful in evaluating problems with dry and transition cow management, cow comfort, ration formulation and bunk management and other problems that may be contributing to substandard production levels.

If days-in-milk are greater than the recommended benchmark, we would begin to examine the repro management program. First we would examine pregnancy rate. If PG rate is with in the guidelines mentioned above, we would assume things are getting better and that production should improve in the future as cows calve and days-in-milk return to the recommended benchmarks. If PG rate is lower than the recommended benchmark, we would need to examine a set of diagnostic benchmarks to determine if poor performance is due to poor heat detection (often an people problem) or poor conception rates (usually a cow problem). Diagnostic indicators include heat detection rates, conception rates (across various parameters), the percent of animals not service by 70 days in milk, services per conception and others.

We can evaluate our udder health management program by examining the distribution of linear somatic cell scores by parity and stage of lactation. Is high SCC a result of just s few high cows or is it a herd problem? Is the problem confined to a certain stage of lactation such as early lactation animals or a specific parity group, such as heifers? Using diagnostic indicators we can get a clearer picture of where problems may exist and what the possible causes might be.

Following this simple, but systematic, approach to monitoring herd performance can provide big dividends to dairy producers by allowing them to more aggressively manage their dairy herd.

Table 1. Benchmarks for Key Performance Indicators

Indicator	Management Area	Benchmark	Located: DRMS Reports
Milk/Cow/Day	Production	70 lbs [1] 85 lbs [2]	Herd Summary 202 Front page
Days-in-milk	Lactation & repro status	170-175	Herd Summary 202 Back page
Pregnancy Rate	Repro performance	.20-.22	Herd Summary 202 Yearly Repro Summary HDR X CR
Somatic Cell Count	Udder Health	< 200,000	Herd Summary 202 Back page
Cull Rate	Total Animal Management	25-35%	Herd Summary 202 Back Page

[1] Milking 2X with no BST
[2] Milking 3X with BST