

MONITORING HEIFER PROGRAMS

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Introduction

Dairy producers, nutritionists, veterinarians, and consultants have utilized dairy records for many years. Record-keeping systems for heifer enterprises have traditionally been less intensive. More recently, records have become computerized, allowing more detailed and sophisticated analysis. For dairy producers, records have been recorded and processed by Dairy Herd Improvement Association (DHIA) processing centers and evaluated utilizing commercially available software such as Dairy Comp 305 (Valley Ag Software, California USA) and PC Dart (Dairy Records Management Services, North Carolina USA). Dairy producers often utilize these programs for the heifer enterprise, and heifer growers often use these or other software specifically designed for their business.

As an industry, we have utilized the computer power available to develop many benchmarks, and we often provide a “report card” that details past success or failure. In general, benchmarks do little to predict future outcomes, and more importantly, are often too slow to let us know there is a serious problem. Aggressive and successful businesses are more interested in where they are growing rather than where they have been.

Monitoring vs. Report Card

Many dairy producers, heifer growers, lenders, consultants, veterinarians, and nutritionists want benchmarks to develop a “report card”. A report card will show past performance and historical perspective. Although it may be useful at times, it does not necessarily provide meaningful information to help a business improve.

What does the word “monitor” mean as applied to dairy records? As a verb, it means the process of tracking parameters to detect change or lack of progress. As a noun, it is a specific parameter that is routinely measured. Why should we monitor records on a dairy or heifer operation? There are really 3 reasons to monitor:

1. Measure the impact of a management change
2. Detect an undesirable result
3. Motivate Change

Management changes include feeding changes, grouping changes, etc. Before any management change is implemented, the business should know how to measure the response. The business should have knowledge of past performance and the ability to measure future performance.

Before any parameter is monitored, the question that needs to be answered should already have been asked. It makes no sense to visit a store and buy a tool, then go home and find

a use for the tool. It also makes no sense to monitor a parameter and then decide what questions it may answer.

Monitoring data requires time and effort. The grower must collect the data, and someone must analyze the data. If this process does not result in action, then why bother? Indeed, the goal of monitoring is to find areas where changes can be made to improve profit. Monitoring is a waste of time and effort if decisions or management interventions do not result.

In summary, monitors should:

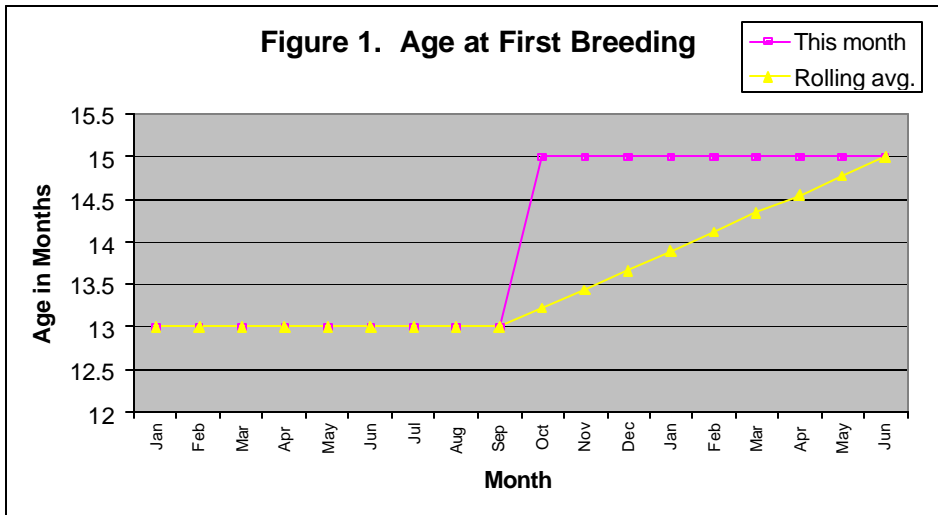
1. be proactive
2. be measurable
3. impact profit
4. minimize variation, bias, lag, and momentum
5. result in action

Problems with Parameters

No parameter is perfect, although some are better than others. Parameter problems can be categorized as follows:

1. Variation
 2. Momentum
 3. Lag
 4. Bias
- (Eicker et al., 2002; Fetrow et al., 1997)

Variation results from one number having a large impact on the result. Data analysis for small herds is often limited for this reason. For example, suppose in one week that a group of 10 heifers were palpated for pregnancy, and 4 were checked pregnant. Suppose the next week that another 10 heifers were palpated, and 3 were pregnant. The numbers would suggest that palpation pregnancy rate dropped from 40 to 30%. This is a 25% reduction in palpation pregnancy rate. Did the grower really get 25% worse?



Momentum is when too much time goes into the calculation, making changes difficult to detect. Large changes in performance are not detected quickly if there is too much momentum. The example in Figure 1 illustrates this point. For the first 9 months in the graph in Figure 1. (Jan-Sept), age at first breeding is 13 months every month. The 9-month rolling average (the average for all heifers that are pregnant) for Jan-Sep remains 13 months. In Oct, the age at first breeding suddenly increased to 15 months, which should indicate a problem for the dairy. By looking at the rolling 9 month average, a significant change is not detected until Feb or March, 5 or 6 months after the problem began.

Lag is the time between when an event occurs and when it is measured. Age at first calving is a parameter that has significant lag. By measuring age at first calving, we are measuring an event that happened 9 months ago (conception). Although a heifer grower may want to record age at first calving for a report card or for marketing purposes, it has no value as a monitor.

Bias occurs when data is ignored or not included in the calculation. This includes using a subset of the herd, or not accurately recording data. First service conception rate is a good example of a parameter with bias. Suppose a grower has 100 heifers come into heat in a give 21 day period. The grower feels confident that 50 of the heifers are in good heat and will conceive, but not sure of the other 40. If only 50 are bred, and 40 conceive, the records would indicate an 80% first service conception rate (40/50). If all 100 heifers were bred, and 60conceived, then first service conception rate is 60%. First service conception rate suggests that the first alternative is best. However, the latter example with a lower first service conception rate resulted in 20 more pregnancies!

What Should the Heifer Grower Monitor?

Traditional monitors include age at first calving, weight at calving, or weight leaving the facility. Previous discussion tells us that these parameters are useless as monitors. If these numbers get worse, the problem is at least 9 months old, and will take at least 9 months to fix. In reality, heifer growers and consultants do a poor job of monitoring heifer programs.

To begin with, what questions should a heifer monitoring system ask? Here are some suggestions:

1. Are my heifers growing fast enough?
2. Are my heifers too fat?
3. Are my heifers healthy?
4. Are my heifers getting pregnant? Are they getting pregnant at the correct age?
5. Are my feed costs resulting in profitable body weight gains?
6. Am I making money?

I don't know the answers to all of these questions, and I don't know that these are the correct questions or the only questions. Each grower, along with their advisors, should strive to ask the correct questions and monitor the appropriate parameters. Below are some thoughts regarding parameters for the questions I've suggested.

Are my heifers growing fast enough? Poor monitors include body weight at freshening or body weight when heifers exit the facility. Better monitors may be body weight at breeding, or better yet body weight each month. Age at first breeding for a given month or number of heifers not bred by 14 months for a given month may be useful.

Are my heifers too fat? Poor monitors include body condition at calving, or complaints from the dairy that heifers are fat or having calving problems. A better monitor may be frequent body condition scoring and visual appraisal of the animals.

Are my heifers healthy? Most growers want to look at death loss as an indicator of heifer health. Dead heifers are the last result of a health problem in most cases. More useful monitors may be disease incidence, number of treatments, medicine usage, or IgG levels for baby calves.

Are my heifers getting pregnant? Age at first calving is probably the worst monitor for reproduction, but probably the most commonly reported. Better monitors may be number of heifers not bred by 14 months, number of pregnant heifers each week, or most appropriately pregnancy rate.

Are my feed costs resulting in profitable body weight gains? Feed cost per day is the common standard, but likely the worst parameter to measure. Heifers gaining poorly will certainly have lower feed costs. Daily dry matter intakes are very useful to monitor if monitored accurately and correctly. Conversion of feed to gain above maintenance may also be useful. Better yet may be income generated from each dollar spent on feed, similar to income over feed cost for a dairy.

Am I making money? Many managers manage by their checkbook, or look at the “bottom line” at the end of the year. Both of these measures are long after the fact. Daily, weekly, or monthly monitors of income over variable expenses are more useful. Another suggestion is to value a pound of body weight for different weight ranges. The value in total body weight gain for all heifers over a month minus the variable costs expended that month would yield a “operating income” of sorts. Fixed costs in this situation are sunk costs (already spent or committed to) and should not be included, as they should not impact day to day decisions.

What kind of heifer are we looking for?

Data (Figure 2) suggests that heifers should be about 1300-1350 lbs pre-calving. In this data set, heavier or lighter heifers don't perform as well. Dairy managers generally want tall and lean heifers. Dairy managers tend to notice dead heifers and small heifers.

Practical Experience

Heifers tend to eat quite a bit more than the equations suggest. Simple feeding programs that incorporate high fiber, high protein forages seems to work the best. It is challenging to maintain growth rates without getting heifers “fat” (everyone's definition of “fat” is

different). Most of my heifer rations tend to have little grain with the exception of a protein source. Most of the facilities are simple and inexpensive.

Heifer Economics

One of the biggest factors in making money in a heifer facility is keeping it full. This is not always easy but necessary for sustained profit. The last heifer or the last pound of growth is where the greatest profit potential lies. Growers need to know their daily fixed costs, daily variable expenses, and daily income over feed for additional gain. This will help justify investments to improve performance or justify economic decisions of adding more heifers. Table 1 displays some marginal costs developed from a simulation model that may be useful for decision making. Although these costs will vary, they are within a reasonable range for estimation.

Summary

As an industry, we do a good job of benchmarking, but a poor job of monitoring. We need to be sure and ask the right questions to develop appropriate monitoring tools.

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Table 1. Marginal heifer costs (Bethard et al, 1997).

Item	Change in Rearing Costs for Each 1% Increase in Item
Varied Feed Costs	+\$7.33
Percent Heat Detection Efficiency	-\$2.80
Percent Death Loss at Birth	-\$2.89
Percent Death Loss, Birth-Weaning	-\$2.42

Figure 2. Effect of age and body weight at first calving on milk production (Bethard et al., 1997)

