

Our heifers become cows

To truly understand the impact of a heifer raising program, we must look to their performance as cows.

by A.F. Kertz

THIS is a sequel to a previous column ("A dollar spent now is a dollar gained later," on page 561 of the September 25, 2017, issue of *Hoard's Dairyman*), which evaluated calf and heifer performance prior to first calving. How about evaluating their performance after first calving?



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There is a way of doing that using DHI monthly Herd Summary records. This approach provides a snapshot of a moving situation. Take for example the August 2017 Production by Lactation Summary data shown in Table 1 from a Midwestern herd.

Account for the obvious

When evaluating the data, don't overlook the obvious. How many cows are in the milking herd, and how many are first-calf heifers? This number will vary somewhat month by month. In a fairly static herd, about one-third will be first-calf heifers. In this herd, it was 50 percent.

There are a variety of reasons this number can be that high — or higher: a herd expanding or starting up, seasonal breeding/calving, older cows culled heavier due to problems, or as a result of multiple heifers due to the use of sexed semen. The average number of lactations in a U.S. herd now is about 2.5. Remember, this is a herd snapshot for a month.

The average age in months of first-calf heifers in this herd was 25 — the same as the U.S. average based on the 2014 NAHMS report. Age of first-calf heifers can vary due to results of the calf and heifer growing program, seasonal calving and breeding (not planned), and purposeful delayed breeding to fill holes in the calving picture for a herd.

This is also a young herd with an average age of 38 months due to both the high percentage of first-calf heifers and relatively few older 3-plus lactation cows at 22 percent. Further analysis of records would reveal the reasons for this picture in this herd at this time.

Measure performance by milk

Milk yield should peak at about six to eight weeks into lactation and is a very good indicator of total lactation milk production. Total lactation milk yield is expected to be 200 to 250 times peak daily milk yield. If peak milk yields are not satisfactory or if decline in milk yield is too rapid after peak, a poor transition program both before and after calving or some holes in the calf and heifer program may exist for first-calf heifers.

Peak milk yield should rise as cows get older with first-calf heifers averaging about 75 to 85 percent of second-lactation cows. The peak

yields of 3-plus lactation cows should jump another 10 to 15 percent over second-lactation cows. Typically, older cows will have the highest actual yields because they are the survivors of culling — and low milk production is a major reason for culling. These numbers can jump around on month-to-month snapshots of the herd.

In a static herd, first- or second-lactation cows may have the highest 305-day M.E. (mature equivalent) projections because they have the best genetics in the herd, which typically improves projections about 200 pounds per lactation annually. In this herd, that is the picture, but I have seen DHI herd records with all kinds of scenarios.

One bias can be the age of first-calf heifers. The younger heifers are, the greater the M.E. projection will be because of age correction. And vice versa. But that is not a good reason to have younger first-calf heifers. On the other hand, while older first-calf heifers may produce more actual milk in their first lactation, that is not a good reason to have older first-calf heifers.

As for body weights, it is important that all be measured either before calving or all after calving. I would prefer before calving as this shows the impact of the calf and heifer growing program or the later lactation and dry cow programs for older cows.

The scale doesn't lie

There are two other things to keep in mind. Heifers and cows lose about 11 percent of their body weight at calving simply from the weight of the calf and associated tissues and fluids. After calving, heifers and cows will lose weight in early lactation due to negative energy balance, but that is somewhat offset and confounded by gain in weight due to higher intake resulting in more rumen and gut fill.

The other thing to remember is that heifers will gain about 10 percent more body weight during their first lactation and grow in height, too. This growth is why heifers do not lose as much weight after calving and why they have

flatter lactation curves. They apportion more nutrients to this growth rather than just for milk production.

First-lactation growth is somewhat dependent on how well grown heifers are as a consequence of their calf and heifer program. In this herd, 1,340 pounds would be close to a goal of 1,400 pounds before first calving body weight. This, of course, will be dependent on genetics and what mature body weights are in a given herd.

In this herd, second-lactation body weights were 15 percent greater than first-calf heifers and another 5 percent greater for older cows versus second-lactation cows. These body weights can jump around a bit from month to month.

Change over time

Now look at the same herd records but from a year earlier in August 2016 in Table 2. The distribution of animals among lactations is similar to August 2017, but there are 12 fewer total animals. Age at first calving was higher by another month at 26, and the 3-plus cows averaged 6 months older than in August 2017. Peak yields in August 2016 were 2 pounds greater for first-calf heifers versus August 2017, but 12 pounds greater for second-lactation cows while only 2 pounds less for 3-plus lactation cows.

The pattern was similar for summit milk. However, in August 2016, first-calf heifers produced 1,300 pounds less 305-day M.E. versus second lactation, whereas there was an 800-pound swing in the other direction in August 2017.

To understand these swings would require delving into the individual cow or herd records, or looking at other monthly summaries to see when this may have begun. First-calf body weights were 50 pounds greater in August 2016 versus 2017. How real this difference was may require looking at other months and seeing whether there is a typical month-to-month swing.

This monthly analysis should not take much time, but it can be a timely snapshot of how your first-calf heifers, and older cows, too, are doing in your herd. It can also tell you whether you need to look back further into how your calf and heifer growing program has been doing.

I have seen it take as little as six months for a calf and heifer program to turn around and show up in the first lactation, but typically it takes a year or more. That is why periodic checks are in order of progress in the calf and heifer program so that issues can surface during that period rather than waiting for problems to show up in first or later lactations. 🐄

Table 1. August 2017 production by lactation

Lactation	No. cows	Months age	Peak milk lbs.	Summit milk, lbs.	305-day M.E. projected pounds			Body weight, lbs.
					Milk	Fat	Protein	
1st	74	25	108	91	29,402	1,072	900	1,340
2nd	42	40	123	109	28,589	1,049	879	1,540
3rd+	33	61	137	126	26,875	997	852	1,610
All	149	38	118	103	28,646	1,050	884	1,460

Table 2. August 2016 production by lactation

Lactation	No. cows	Months age	Peak milk lbs.	Summit milk, lbs.	305-day M.E. projected pounds			Body weight, lbs.
					Milk	Fat	Protein	
1st	66	26	110	97	29,306	1,090	871	1,390
2nd	32	40	134	123	30,618	1,149	916	1,520
3rd+	39	67	135	126	26,018	957	792	1,620
All	137	41	122	111	28,773	1,070	862	1,400