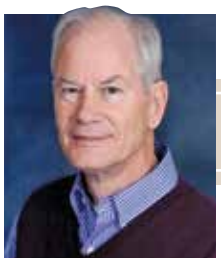
A dollar spent now is a dollar gained later

Keeping calves growing during the weaning months presents both a great challenge and a great opportunity.

by A.F. Kertz

SOMETIMES we may get caught up in details and not look at the overall picture. And sometimes the opposite occurs.

In this article, let's look at the overall picture of evaluating calf and heifer performance in segments. To keep it simple, let's assume we have Holstein heifer calves that weigh about 88 pounds at birth. If our goal is to double birth weight by the end of two months of life, that would require an average daily gain of about 1.5 pounds to reach 176 pounds.



KERTZ

The author is the principal in ANDHIL LLC, a St. Louis-based consulting firm.

There are many factors that can influence how well calves do in that first two months:

- Calving difficulty
- Calving environment
- Condition of dam
- Cleanliness and quality of colostrum
- How soon after birth and how much colostrum is fed
- Housing
- Ventilation
- Clean and dry bedding
- Incidence and severity of scours and respiratory problems
- The amount of milk or milk replacer fed
- Pasteurization
- Quality and consistency of solids and nutrients
- Type/amount/particle size if feeding forage
- Amount and cleanliness of water fed
- Warm water in winter
- Adjustments in feeding program and housing due to temperatures outside calf's zone of thermal neutrality

Measuring growth

Now let's look at the overall goal of having a heifer calve for the first time at 24 months of age. After calves are weaned, an average daily gain within the range of 1.8 to 2 pounds will result in a first-calf heifer weighing about 1,400 pounds before calving or about 1,250 pounds after calving. Heifers and cows lose about 11 percent of their body weight from loss of the calf and fluids/tissues associated with calving.

The month following weaning, at 2 months of age, is a key transition month. Too often, these calves are put into large groups, calf starter is dropped from the feeding program, especially if it is texturized (to save some money), and then animals are provided free-choice forage or sometimes put on a TMR. The result is gut fill, which distorts any true body weight growth and actually often reduces it.

My recommendation for that month is to put calves in groups of six to eight, allow them to eat 6 to 8 pounds daily of the texturized starter, and limit them to no more than 1 pound daily of an alfalfa or good-quality grass hay. This allows for further rumen development, minimizes gut fill, and creates a good transition without a slump.

Then, during the fourth month, take calves off the starter, double the forage allowance, and use a well-balanced grower or grain mix limit fed to about 4 to 6 pounds daily. During the fifth and sixth months, raise the forage level up to 50 percent or more, even through a TMR.

Height matters, too

We need to consider not only body weight growth but height gain, too. From birth to first calving, wither height should rise about 24 inches, dependent on genetics. That is not a linear growth like daily gain, more or less, is following weaning.

One-half of the height development should occur during the first six months, 25 percent in the following six months, and only 25 percent in the second year of life. And as far as I can determine, this height trajectory cannot be made up later if not done well within those time periods.

This means there needs to be some periodic height measurements. Wither height measurements can be somewhat difficult and variable because heifers do not like to stand still for such data collection. A good alternative is hip height measurements. Heifers stand better on their rear legs, and these benchmarks can be made when heifers are in headlocks. If you have a wither height standard chart, simply add 2 inches to it at each age point for determining what hip heights should be.

Setting standards

What weights and heights should heifers be for my herd? That really depends on mature weights and heights for your cows. The only way to determine that is to take some measurements. That becomes more problematic when there are very diverse genetics in a herd — especially in larger herds, or when there is some crossbreeding. Rather than trying to have a multitude of charts for various size heifers, former University of Wisconsin Extension Specialist Pat Hoffman developed Table 1 based on relative percentage body weight goals at various ages.

Table 1: Calf growth benchmarks

Heifer age (months)	Percent of mature body weight
Calf	6.5
1	9.7
2	12.8
3	16.5
4	20.2
5	24.0
6	27.7
7	31.4
8	35.0
9	38.9
10	42.4
11	46.3
12	49.9
13 Breeding	53.7
14 Ages	57.4
15 Program	61.1
16	64.7
17	68.5
18	72.2
19	76.0
20	79.6
21	83.3
22	87.1
23	90.8
24 (7d precalving)	94.0
24 (7d postcalving)	85.0

Mature cows at 5 to 6 years of age will generally improve wither height by another 2 to 3 inches and weight by 200 pounds compared to first-calf heifer heights and weights.

Remember how I said daily gain should be about 1.8 to 2 pounds per day after the second month of age? But some will say it can and should be greater. Growth and body composition studies (going back to my Ph.D. project at Cornell) have shown 2.2 pounds daily gain is about the maximum for body protein deposition. Gains in excess of that are largely fattening.

This in itself is an issue regardless of whether it negatively impacts mammary gland development. In dairy animals, internal fattening occurs before you see it in body condition. Much of this fattening can be above the rumen and in the birth canal area. The latter results in a restriction, which can cause more difficult calving. We know that difficult calving negatively impacts the calf and the cow. And fat heifers and cows are more likely to have a host of metabolic issues such as ketosis and milk fever.

How it applies

Lastly, let's look at feed efficiency using data from different age groupings at a large calf and heifer ranch in Spain that I have worked with. Note in Table 2 that calves under 2 months of age had a feed efficiency under 2 — a number that compares to growing chickens and pigs. As heifers grew, they ate more, but their daily gains averaged about 2 pounds across groups. Consequently, the more heifers grew, the poorer their feed efficiency. It's noteworthy that feed costs are less per pound daily for older heifers than for young calves.

While this is largely true, it ignores that calves are the most efficient animals at converting nutrients to growth on the dairy. Over the last 10 years, the total cost to raise a heifer in the U.S. has ranged from about $1,500 to $2,500. Now, if it costs $25 to $50 more to better feed a calf for three months (for example, including a good texturized calf starter versus an all pelleted one in the diet), that is a pittance compared to an average of about $2,000 total cost to raise a heifer. And yet its impact is greater than anything else during the entire heifer raising period.

In summary, at least several times a year measure at least 10 to 12 animals per grouping for weight and height at birth, 2 months of age, 6 months of age, a year of age, and right prior to first calving. Then measure some weights and heights of mature cows in your herd. If at any of those points animals are not where they need to be, track backward to see where and why the problem is occurring in order to fix the program.

Table 2: Calf feed efficiency

Group	Age at end, day	DMI, lbs./day	ADG, lbs./day	DMI/ADG
1	65	2.9	1.67	1.74
2	111	5.9	2.20	2.66
3	162	11.4	2.27	5.01
4	226	14.6	2.18	6.72
5	295	18.8	2.11	7.74
6	406	19.6	1.87	10.48
7	650	23.3	1.85	12.58