

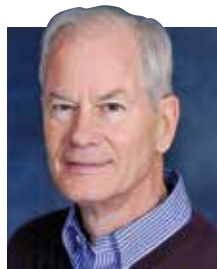


# Stunt growth, stunt future performance

Growth targets for young calves are well documented. Now hone in on what should occur from weaning to first calving.

by A.F. Kertz

**A**FTER we have managed to double calves' birth weight by 2 months of age, what is next? The need for a good transition into group housing is paramount. Ideally, calves would stay in their separate pen or hutch for a full two weeks after weaning, move into a group of no more than eight, stay on their starter and get no more



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than a pound of a good-quality hay — preferably alfalfa daily. This is truly a transition group.

After one month in this group, calves can then be moved into the next pen of no more than 24. They can also go off of their starter and onto a TMR with no more than 50 percent forage. Without good transitions during this time, the danger is that calves will either stall out or have a respiratory problem from experiencing too many changes at once. Both will impair them for life.

### Well developed but not fat

After the first two months, what should heifer growth rates be? Let's do the arithmetic. Assume a Holstein heifer calf weighs 90 pounds at birth and doubles its birth weight to 180 pounds by the end of two months. She will need to weigh about 1,400 pounds before calving at 24 months. Your heifer needs 1,220 pounds of additional gain over the next 22 months. With an average of 30.5 days per month, this would require a daily gain of 1.82 pounds. That is quite doable.

Breeding heifers to calve earlier can be done, but if heifers are subsequently not as well grown and developed, they may have difficulty calving which typically limits

that heifer's first lactation milk yield.

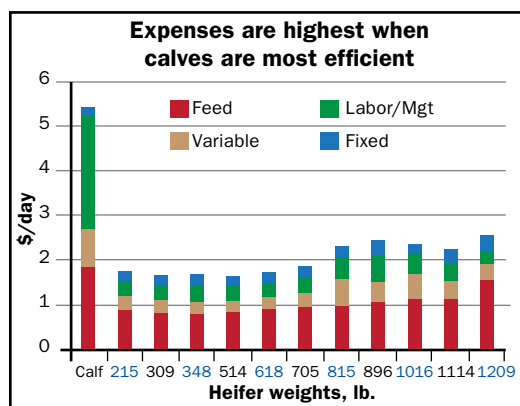
On the other hand, we do not want to see fat heifers. These animals would be most likely to later undergo "fat cow" syndrome leading to calving difficulties, poor appetite and an elevated probability of metabolic problems.

Growth is not necessarily a flat line at 1.8 pounds. Calves and heifers do undergo some growth spurts most likely related to episodic growth hormone secretion/release. We can relate to that in the growth episodes we see in children. From their first to second calving, heifers' body weight will raise 11 percent based on a database collected at Purina, and published in the *Journal of Dairy Science*.

### Half their height in six months

The other major element of growth is height. That is often difficult to eyeball. In fact, if I were told that I could only have one measure of growth in heifers, I would choose height. We can look at heifers and discern their body condition just like we do for cows. And, if we know their age, coupled with height measurements, we can determine how well heifers are growing.

Another reason that I would choose height is because it is not linear like daily gain. During the first six months of life, a heifer should achieve 50 percent of the height accretion that occurs from birth to first calving. If a heifer is 30 inches tall at the withers at birth and



**IN THE 12 MONTHS PRIOR TO CALVING**, a heifer should only have 6 inches left to grow. Track your herd's growth rate to see if heifers are drawing the short straw.

54 inches tall prior to its first calving, half of that 24-inch height gain should have occurred during the heifer's first six months of life.

Another 6 inches should be gained between 6 and 12 months of age. A final 6-inch boost occurs during the last 12 months of life before calving. There will be another 2 inches of wither height gained between the first and second calving. There are no data showing heifers are able to compensate later for poor initial growth.

### Protein needs raise before calving

When the 2001 Nutrient Requirements (NRC) of Dairy Cattle was being developed, we contributed a 10-year database from Purina calf/heifer studies for dry matter intake (DMI). That database was compared to a prior beef cattle prediction. The pattern of those actual DMIs showed that as DMI rose with the growth of heifers, so did the range and variation of DMI.

This is because ration feedstuffs for heifers can vary considerably as can the nutrient content and digestibility of forages and feedstuffs. A good reference point to evaluate heifer rations and their impact on growth is that of protein to energy developed by Mike VandeHaar of Michigan State.

This calculation uses the ratio of grams of crude protein divided by megacalories of metabolizable energy per kilogram in the ration. From 2 through 6 months of age, this relationship is 66, drops to 63 from 8 to 10 months, declines further, to 60 from 12 to 14 months, and bottoms out at 56 from 16 through 22 months. It then raises to 60 for the last two months of pregnancy. These ratios reflect that proportionately more protein is needed during the various growth phases and late pregnancy.

### Don't cut corners and costs

Two major studies evaluating the cost of raising heifers have been done by the University of Wisconsin. Data from that study were graphed by various body weight groupings (figure). Not surprisingly, costs were the highest during calthood or the first seven weeks. Nearly half of that cost is labor.

Unfortunately, too many look at those numbers and decide that this is where they need to cut costs — and usually that is feed costs. That means, though, that you are limiting nutrition to calves, which are the most efficient in converting nutrients to growth. You also limit the "platform" of the calf which will impact how well she grows as a heifer.

The calf period was only 20 percent of the total costs to raise a heifer to first calving. Cutting costs here will not be a good decision long-term. After calves are weaned, there is an immediate drop in feed costs per day, but a progressive hike will occur.

As heifers gain body weight, their maintenance costs raise accordingly. Maintenance costs must be met before heifers can use additional nutrients for growth. In a study at a large Spanish calf and heifer ranch, as heifers grew, DMI rose while daily gain was similar at about 2 pounds per day. Consequently, feed used per pound of gain progressively elevated in a similar line as DMI. The best feed efficiency was during the first two months, and then feed efficiency progressively worsened.

When developing or reviewing your program, remember that the best conversions of nutrients to growth occur when young. This is true for body weight and height accretion. To verify where your calf/heifer program is, do some periodic measurements of height and weight at birth, 2 months of age, 6 months of age, 12 months of age and right before first calving. Then make changes as needed. 🐄