



MILL MATTERS

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HEIFER MATURITY REALLY, REALLY MATTERS

BY AMANDA SMITH



There has been an on-going debate over whether calving heifers at early ages increases lifetime milk and revenue. The answer has often been muddy because some dairies find it works well while other dairies find it doesn't.

Early calving has been promoted because it gets heifers in the milking string faster, decreases heifer inventory numbers and reduces heifer feed and rearing costs. While some of these early calving heifers perform as expected, others don't, noted an article in Dairy Herd Management.

Gavin Staley, a veterinarian and technical service specialist with Diamond V, has looked at more than 450,000 Dairy Comp records on 174 dairies and believes he has found the answer to the conundrum. Heifer maturity, defined as weight at calving, really, really matters, he says.

In fact, weight at calving not only determines first-lactation performance, it pretty much sets in stone lifetime performance and your herd's overall performance. "First lactation milk production sets the 'ceiling' for the whole herd," says Staley. "The herd cannot out-perform the production level set by first lactation animals."

Through the analysis of these records, Staley found four consistent facts in herd after herd:

- At five weeks after calving, 2nd lactation cows will produce 30 pounds more milk than first lactation heifers.
- At five weeks after calving, 3rd lactation cows will produce 8 to 10 pounds more milk than second lactation cows.
- These differences appear to be independent of the level of production or milking frequency.
- Herds producing 100 pounds of milk per day (tank average) will have heifers producing 100 pounds per day 10 weeks after calving.

What drives this is heifer maturity. "Fresh, post-calving, heifers need to be at 85% of mature body weight post calving (close-up heifers

should be 95% of mature body weight)," Staley says. If they're not, heifers will continue to grow during their first lactation, but that growth comes at the expense of milk production.

And here's the kicker: Every pound of "missing" body weight will cost 7 pounds of milk production. So one month of growth deficit before calving costs 7 months of lactation.

If you calve early, heifers have to grow faster to reach mature body weight. For example, assume your herd's mature body weight (average weight of 3rd, 4th and 5th lactation cows at 80 to 120 days in milk prior to becoming pregnant) is 1,520 pounds. Close-up springers then need to weigh 1,444 pounds (95% of mature weight). Subtracting the heifer's 85-pound weight at birth means the heifer will have to grow 1,359 pounds from birth to calving to reach her target growth. Following is the rate of gain she must then achieve, depending on age at freshening:

Age at Freshening	Average Daily Growth
21 months (640 days)	2.05
22 months (670 days)	1.98
23 months (700 days)	1.90
24 months (730 days)	1.87
25 months (760 days)	1.77

"These are quite ambitious growth rates. Out in the industry, average daily gain is more in the range of 1.75 to 1.8 pounds/day," says Staley.

If you are only achieving 1.8 ADG, heifers calving in at 22 months will not only be slower growing but have fewer days to achieve their mature weight goals, meaning they could be 75 or 100 pounds underweight—or more. That has profound impact on milk production. "Sixty pounds of additional weight at calving equates to 3 to 4 pounds more milk production per day," says Staley. *(continued on reverse)*

There is also within herd variation on heifer weights. In one herd Staley measured, a quarter of the heifers were calving in at less than 1,200 pounds. But the best heifers were calving in at over 1,400 pounds. There was a 17 pound/day milk difference between these groups.

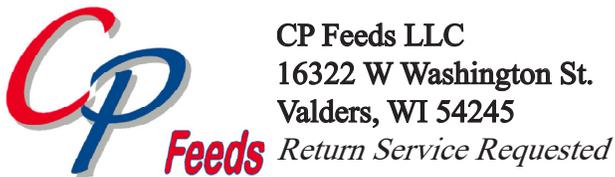
So what's the solution? The first thing is to collect data:

1. Get mature body weights on your 3rd-plus lactation cows at 80 – 120 days in milk.
2. Weigh heifers as they freshen.
3. Set heifer health and growth goals for all stages of heifer development, from colostrum feeding through calving, and then meet them.
4. Weigh calves at various stages of growth to determine if your heifer program is achieving rate of gain goals.
5. If you are, you can confidently breed heifers to calve at 22 to 23 months.
6. If you are not meeting growth goals, delay breeding so that heifers are reaching their maturity weight goals at calving.

Jersey heifers follow the same pattern as Holsteins, producing less milk the earlier they calve. Work by Todd Birkle, a veterinarian and ruminant field specialist with Diamond V, shows that there is nearly a 2,500 pound/cow difference over the first three lactations between Jersey heifers that calve before 21 months of age and those that calve after 23 months.

Age at freshening	Sum of 1st, 2nd, 3rd Lactation Milk	Deviation from Average Sum
19-21 months	56,882 lb	-1,154 lb
21-22 months	57,228 lb	- 808 lb
22-23 months	58,683 lb	+ 648 lb
23-24 months	59,350 lb	+1,314 lb
Difference between early and 23-24 month calving		2,468 lb

You can learn more by listening to Staley's presentation that he gave at World Dairy Expo: <https://worlddairyexpo.com/pages/2019-Expo-Seminar-Videos.php>



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