

Tom's 20 Questions to Determine Where Your Herd is

T.P. Tylutki PhD Dpl ACAN
AMTS LLC

Heifers

1. What is weaning weight (at 49 days) as a percentage of birthweight?
2. For 100 heifer calves born, how many remain at 90 days of age?
3. For every 100 heifer calves born, how many enter the milking herd?
4. What is Age of First Calving?
5. What is weight, BCS, and height at calving?

Dry Cows

6. One group or two group dry cow program and how many days dry are 1st and \geq 2nd lactation animals?
7. Do dry cows GAIN, LOSE, or MAINTAIN condition score during the dry period?
8. What is feed bunk space per cow in dry cow pens?
9. How many times are dry cows moved between groups while dry?
10. What is the forage NDF as a percent of bodyweight fed to dry cows?
11. How many grams of calcium are fed to close up dry cows?
12. What is DCAD of close up dry cow diet (or all dry cow diet if one group)?

Lactating Herd

13. What are dry matter intakes by pen?
14. What is weight at calving of cows by lactation number?
15. For every 100 cows that calve, how many:
 - a. die in the first 30 days?
 - b. die from 30 - 60 days in milk?
 - c. are sold in the first 30 days?
 - d. are sold between 30 and 60 days in milk?
16. What is the calving interval?
17. What is the incidence of lameness (lameness score 3 or higher)?
18. What is feed bunk space per cow?
19. Are feeds analyzed and diets formulated by a nutritionist at least monthly?

Feeding

20. Is a feed management program used?

Tom's Reasons for asking these specific questions.

General comments: you may wonder why I haven't asked numbers like milk production and components, cull rate, conception rate, etc. These values are all outputs of what your dairy is doing. By looking at these values, we only know the surface and not how things are working internally (or if you are profitable). The questions that have been posed are at a level where we can evaluate the various systems within the dairy and many represent critical control points. If the answers you give to these questions fall within our guidelines, milk and reproduction tend to be good. For example, with question 1: if calves are weaned at only 150% of birthweight, I can tell that you are experiencing high levels of morbidity (>20%), mortality is >5% (although many can manage at 1.5%), and your treatment costs per calf are high (typically to avoid the higher mortality rates). Simply asking what your mortality or morbidity rates are does not address the issue of economics or future productivity/longevity.

Heifers

1. What is weaning weight (at 49 days) as a percentage of birthweight?
 - a. *The current target is to at least DOUBLE birthweight at weaning (49-56 days). Research has shown that at least 25% of the variation in first lactation milk yield can be related directly to the ADG in the first 6-7 weeks of life. Additionally, increasing ADG during the milk feeding phase results in 2-300 l more milk in first lactation with similar yield increases in every lactation.*
2. For 100 heifer calves born, how many remain at 90 days of age?
 - a. *This also goes back to milk feeding level. Higher ADG during milk fed phase DIRECTLY REDUCES morbidity and mortality. We can also determine colostrum quality from morbidity and mortality and how well the transition out of weaning works by looking at this value.*
3. For every 100 heifer calves born, how many enter the milking herd?
 - a. *Losses post-weaning should be <5% for any reason. Values greater than this post-weaning indicate multiple opportunities to reduce cost and improve replacement selection.*
4. What is Age of First Calving?
 - a. *this dictates the growth requirements. Plus is a pure economical issue as it costs (feed, labor, equipment, vet, breeding, depreciation) between \$2,000 and 2,500 USD to raise a heifer (depreciation and mortality losses account for 3-500 USD). The higher the age of first calving, the greater the cost as days on feed are higher.*
5. What is weight, BCS, and height at calving?
 - a. *At calving (post-calving), heifers should weigh at least 85% of mature weight. Lower than this, heifers will sacrifice milk for growth requirements to achieve a 2nd lactation calving weight of 92% of mature weight. BCS and height tend to be related where high BCS heifers tend to be smaller in stature. Holsteins should be*

at least 53 inches (135 cm) hip height at calving, Jerseys 48 inches (122 cm) wither height, and Ayrshires 51 inches (130 cm) wither height.

Dry Cows

6. One group or two group dry cow program?
 - f. this is more an informational question to determine if days dry are 50 to 60 for 1st lactation and 45 to 60 for others. Outside of these ranges, health and production will suffer.*
7. Do dry cows GAIN, LOSE, or MAINTAIN condition score during the dry period?
 - f. Dry cows should NEVER lose BCS during the dry period. Any loss directly impacts post-calving health, survival, productivity, and reproduction in the upcoming lactation. Our ideal BCS for dry cows is between 3.25 and 3.5. Losing body weight results in fat accumulation in the liver resulting in 'downers' and 'poor-doers' post-calving. Additionally, these cows will be 3-5x more likely to experience ketosis, metritis, and other post-calving metabolics. A slight gain in BCS is acceptable but should be no more than 0.25 points during the entire dry period.*
8. What is feed bunk space per cow in dry cow pens?
 - f. Work from Univ. of British Columbia has shown that social competition at the feed bunk at 21 days PRE-CALVING directly impacts metritis. Over-stocking these pens (reducing feed bunk space to less than 45 cm/c) directly. This social behavior (different study) also clearly showed that feeding behavior during the dry period directly impacts ketosis (clinical and sub-clinical) post-calving.*
9. How many times are dry cows moved between groups while dry?
 - f. further work for UBC found that moving dry cows between pens reduced the DMI of the moved cow 9% the after the move. Furthermore, rumination time and eating time were reduced 10%. These 'new' cows displaced others in the group twice as many times from the feed bunk as group mates. These short term disruptions will negatively impact post-calving health and productivity.*
10. What is the forage NDF as a percent of bodyweight fed to dry cows?
 - f. diets less than 0.85% forage NDF percent bodyweight are more prone to post-calving displaced abomasums and other potential metabolics. Cows fed these low levels of forage tend to want to over-eat early in the dry period and then greatly reduce their intakes during the pre-fresh period.*
11. How many grams of calcium are fed to close up dry cows?
 - f. Calcium is still an important component to be evaluating when looking at potential for milk fever, retained placentas, and other post-calving issues. Lean et. al. from Australia conducted a meta-analysis and found that diets need to be either low in calcium (less than 60 g intake) or very high (>200 g). Levels between this had up to 5x greater risk for milk fever.*
12. What is DCAD of close up dry cow diet (or all dry cow diet if one group)?

- f. *Along with calcium intakes, DCADs can be used to evaluate milk fever risk and overall transition quality. Overton (Cornell) evaluated the impact of simply reducing DCAD 10 units (for diets already at -10 meq/100 g) and found further reductions in post-calving metabolic diseases. However, the Lean meta-analysis also found that the number of days these diets are fed greatly impacts their potential success or failure. Cows generally adapt to negative DCAD diets within 10 days! Thus, while low DCAD diets generally are favorable, under one group dry cow situations, levels may need to be adjusted to ensure favorable responses.*

Lactating Herd

13. What are dry matter intakes by pen?

- m. *These are some of the most difficult values to obtain on-farm. Many times, as a nutritionist, we must try and work backwards from either known milk of a group or expected milk of a group (if daily milk weights are not available). We must then ask if milk is being held back by an intake limitation or if cows are 'over-eating'. Feed is the most expensive component of producing milk (or gain) so to accurately, and at the best economic level, to formulate, we must know intakes. Some may say 'simply use the predicted intakes'. These are only a guideline as the best intake equation only accounts for about 80% of the variation. And, all intake equations rely primarily on two data inputs: bodyweight and fat corrected milk. We then apply adjustments for environment, but even then we are still missing large formulation and decision making opportunities.*

14. What is weight at calving of cows by lactation number?

- m. *in addition to growth requirements, ration formulation systems all require body weight as an input to calculate animal requirements. If, as a nutritionist, I am off 45 kg on body weight, the predicted DMI will be off 1 kg and the maintenance energy requirements will be off 10%. Today's cows are much bigger than they were 20 years ago! If I were to have one body weight on a cow, her weight at calving is the best one! Ideally, install in-line scales and weigh every cow every milking. Farms that have these systems find they can isolate sick cows 2-3 days earlier because the weights go down from the cow NOT DRINKING and they can intervene earlier.*

15. For every 100 cows that calve, how many:

- a. die in the first 30 days?
- b. die from 30 - 60 days in milk?
- c. are sold in the first 30 days?
- d. are sold between 30 and 60 days in milk?
 - a. *cattle that leave the herd within the first 60 days in milk represent (with a few exceptions) major losses on dairy farms. We all know of (and do this) that 'cow' that was dried off early or may have other issues but she is pregnant and we keep her for a 'heifer calf' (which usually means either a*

dead calf or a bull calf) and then sell the cow post-calving. These are the exceptions to the rule though! Losing a cow at this stage of the productive cycle, especially if she dies, is a complete loss of income from that lactation and the value of the cull cow. Less than 5% of fresh cows should be sold or die during the first 60 days. Herds less than 1,000 cows need to evaluate these numbers quarterly or twice annually as this value can shift drastically due to various events. In addition to typical post-calving metabolic disease, these values will tell us about the overall transition phase, calving difficulty, lameness, etc. Regardless, records from individual animals that were sold or died need to be evaluated to look for the root cause. We know that at times, just random events cause a monthly spike! We also know that when we evaluate these events, we must be discussing with the manager/owners what changed/occurred two to six months previously.

16. What is the calving interval?

p. there are a lot of ways to look at reproductive success in a herd. And there are a lot of ways that these values vary within farm based on how the question is asked, cull rates, bST use, etc. In the end though, the calving interval tells us a fair amount about heat detection, conception rates, nutrition, and more. 12.5 to 13.5 months would still be the acceptable range but 12.8-13.0 more desirable based on observations.

17. What is the incidence of lameness (lameness score 3 or higher)?

p. For many farms, the answer will be “we don’t know” or “low”. In reality, on many farms it is >20% and has been observed to be >50%. This can be influenced by cow comfort, nutrition, hoof trimming style and frequency, and a whole host of other variables. The generally accepted goal is to have <15% score 3 or greater.

18. What is feed bunk space per cow?

p. bunk space and feeding frequency directly impact eating time and meal patterns. Over-stocking (<45 cm/c feed bunk space) will alter eating behavior. Total DMI may not change but the meal size, number of meals, eating rate, and total eating time all are altered. This impacts nutrient utilization, rumen pH, cow health (acidosis), lameness, resting time, etc. and will directly impact milk volume, components, reproduction, etc.

19. Are feeds analyzed and diets formulated by a nutritionist at least monthly?

p. Lets start with dry matters on silages. Statistically, to maintain ‘control’ of the diet, feeds in bunk silos should be measured for dry matter 3-5 times per week, bagged silages 1-4 times per DAY, and upright silos 3-5 times per week. As for standard analysis and formulation: feeds change all the time. Even corn silage all from one field will vary 10-20% in NDF depending on where in the field, soil fertility, etc. And no, simple mixing in the silo does NOT make this variance go away. In an ideal world, diets would be evaluated and updated weekly if not

more frequently! This is how you can maintain milk per cow variability of less than 100 ml!

Feeding

20. Is a feed management program used?

- t. From our experience, shrink is not the birds or the wind. It is the feeder over-feeding ingredients. I as a nutritionist can formulate to the nearest mg but without a feed management program, the potential for over- or under-feeding is very high. Additionally, it makes the feeders job 'easier' as they do not have to try to make math adjustments on the fly. They can focus on doing the best job they can. Not to mention the ability to track inventory, project needs, etc.*