

Optimizing Transition Cow Performance

Todd Stroup, Cameron Nightingale, PhD, James Tully, PhD, Dipl ACAN



Presentation Outline

- Who is Pine Creek Nutrition?
- Differences between Jerseys and Holsteins
 - Microbial Populations
 - Transition Challenges
- General Guidelines for Successful Transitions
 - Minimize Stress
 - Nutrient Requirements
 - DCAD Diets, Urine pH

Are Jerseys different cows?

- **Yes**

- There is some evidence to show that the difference isn't just size related. Numerous research articles have identified differences. We have chosen 2 to highlight the fact that differences exist.

- University of Nebraska-Lincoln

- Microbial populations under identical conditions differ.

Rumen bacterial community composition in Holstein and Jersey cows is different under same dietary condition and is not affected by sampling method. HA Paz, CL Anderson, MJ Muller, PJ Kononoff, and SC Fernando. 2016. *Frontiers in Microbiology* 7:1206, published on-line.

Are Jerseys different cows?

- Microbial populations under identical conditions differ.
- Small sample size – 4 Jerseys, 5 Holsteins
- All mature, lactating cows
- Housing and diets identical
- Fed and housed individually 4 weeks prior to collection

Are Jerseys different cows?

- Microbial populations under identical conditions differ.
- While most of the rumen microbes are the same between the breeds, the proportions differed in this study.
- In addition, the Holstein cows had a higher species diversity compared to the Jerseys.
- None of this data suggests a positive or negative implication.
- There is likely differing cellulolytic activity between breeds but this limited data does not explain productive differences between the breeds.
- As always – More research is needed.

Are Jerseys different cows?

- Under less than ideal conditions Jerseys have more transition challenges.
- We selected this next paper to highlight the opportunity that exists for improved transitions when breed differences are managed.
- A study of the incidence of milk fever in Jersey and Holstein cows at a dairy farm in Beatrice, Zimbabwe. 2017. B. Chiwome, E. Kandiwa, B. Mushonga, S. Sajeni, and G. Habarugira. 2017. J South African Vet Assoc. Vol 88:1. www.scielo.org.za.
- 3 year study. 1,278 calvings.

Are Jerseys different cows?

- Under less than ideal conditions Jerseys have more transition challenges.
- Incidence of MF
 - Holsteins = 4.82%
 - Jerseys = 14.78%
- 3X more likely to have MF when fed and housed the same as Holsteins.
- ****Regardless of breed, incidence increases with higher production, which may or may not be confounded with increasing parity.
- With proper nutrition and management incidence of calving issues in Jerseys can be controlled.

Are Jerseys different cows?

Research articles usually end with “more research is needed.” The group from Zimbabwe breaks away from this and offered some very practical advice. This quote is pulled directly from the paper -

- “This study confirms that the risk of developing milk fever is higher in Jerseys and also increases with increasing parity and higher levels of milk production in both breeds, thus advocating for special considerations when dairy cows fit these criteria.”

Jersey Cows: She really is different

- 6 Rules for successful transitions
 1. Minimize Stress
 2. Use Nutrient Requirements
 3. DCAD diets, monitor urine pH
 4. Few, infrequent moves as calving approaches
 5. Fresh Cow Monitoring
 6. Monitor Disease Incidence

Rules for successful transitions – General Rule

1. Minimize Stress

- Crowding
- Moves
- EBS
- Feed changes
- Nutritional
- Handling
- Disease

Rules for successful transitions – General Rule

2. Use nutrient requirements

- Metabolizable protein
- Digestible carbohydrates
 - Focus on high quality forages. When possible a variety of sources will support a diverse rumen microbiome.
 - Adequate soluble carbohydrates will be required in close up pen for adaptation to lactating diets.
- Vitamins and Minerals. Little evidence exists to support straying too far from NRC, Dairy.

Rules for successful transitions

3. DCAD diets, monitor urine pH

- The concept of Dietary Cation Anion Difference for targeted nutrition during the last 14-21 days of gestation has taken off since the early 1990s. In our experience this is a critical piece for successful transition of the Jersey cow.
- In broad terms these diets cause a short-term metabolic acidosis. This alters calcium metabolism such that there is greater Ca absorption, enhanced mobilization of Ca from bone, and more rapid Ca excretion from the kidney. This is under the control of PTH, and Vitamin D.
- Monitoring urine pH in prefresh cows ranks as our #1 tool to assess transition cow performance. Other tests will be discussed but urine pH is easy, cow-side, offers early indication of trouble and actionable.

Rules for successful transitions – *DCAD Continued*

3. DCAD diets, monitor urine pH

- Diets can be acidified in various ways. Anionic minerals (Ex, calcium sulfate, calcium chloride, ammonium chloride) and commercially available supplements that primarily rely on chloride can be used successfully.
- On paper, diets of *-5 to -12 meq/100 gm diet DM* should produce an appropriate reduction in urine pH. When urine pH gets too low we tend to see more RPs. As urine pH gets close to 7.0 incidence of MF goes up.
- Every herd is different. Some herds will perform well when urine pH is 5.5. Others will target 6.5 for acceptable results. In general, Jerseys respond well to slightly lower urine pH than do Holsteins.
- 1.2-1.5% calcium, diet DM
- 30-50KIU Vitamin D. The vitamin D is especially critical in confinement operations (cross ventilated facilities) and herds in the northern part of the country where sunlight is limited.

Rules for successful transitions

4. Few, infrequent moves as calving approaches

- Essential for smooth transitions. The stress of socialization should be recognized. While a DCAD diet only takes a few days to acidify (lower urine pH) having her on this diet for at least 14 days insures good intakes. Target 21 days for close up period since some animals will calve early. If you are diagnosing twins, 28 days on the negative DCAD diet should be the target.
- Within a few days of calving the cow will naturally drop in **dry matter intake**. Avoid moves this close to calving. The importance of high dry matter intake pre-calving can not be overemphasized. Avoid individual calving pens. Cows like to be with other animals at calving, just not too close to them.

Rules for successful transitions – *(4 Continued)*

*4. Additional points on importance of **dry matter intake**.*

- The cascade of negative events associated with calving likely begin with declining intakes.
- Declining intakes, means greater NEB, resulting in higher incidence of subclinical and clinical ketosis. Animals are then 3-8* times more likely to get a DA, 2-5* times higher incidence of metritis when diagnosed with SCK.
- In addition to moves, other stressors can cause a drop in DMI. Overstocking the feedbunk, overstocking the bedding area, and limit feeding do not work.

*Range due to study and study design