



# NUTRITION NOTES

Innovation + Research from Kent Nutrition Group

DATE

## NON-NUTRITIONAL REASONS COWS DON'T MILK

At KNG, we sell nutrition! As a result, we tend to focus on the diet as the solution to a situation when cows are not performing. However, it is very likely that there are also non-nutritional issues that may be preventing cows from milking at their full potential. Especially now, with low profit margins in dairy, we need to look at the whole picture when advising customers on how to best improve profitability. In the next few months we will be rolling out a new state-of-the-art ration balancing program. This will assist in the development of diets that will combine forages and grains at optimal cost while ensuring peak rumen function. However, we need to continue to recognize that often there are management practices that may also need to be improved.

At the recent (2015) Penn State Nutrition Workshop, Alex Bach from the Department of Ruminant Production, IRTA, Barcelona, Spain discussed a study (Bach et al., 2008) where 47 dairy herds in northeast Spain with similar genetics were fed exactly the same diet. Since all cows were offered the same nutrition, this created an opportunity to evaluate the effects of differing management practices on productivity. Despite the same nutrition, the average daily milk production across these herds ranged from a low of 45.4 to a high of 74.5 pounds. The study determined that 56% of this 29-pound variation in production could be accounted for by several non-nutritional factors.

### These non-nutritional factors were:

1. Age of cows at first freshening
  - a. In this study the average age of heifers at 1st calving was 27.7 months. For those freshening at older than 24 months, there was a negative relationship between advancing age and milk production.
  - b. In a follow-up study, they found a positive relationship between bodyweight at 1st freshening and 150-day milk production.
2. Stocking density – Across herds, the number of free stalls and how well they were maintained accounted for 38% of the variation in production.
  - a. Cows housed where stalls were best maintained had the highest production.
  - b. Herds with the highest stocking density, culled the most cows.
  - c. The ratio of free stalls to lactating cows was positively correlated to milk production. With more than one cow per stall, milk declined. However, more than one stall per cow tended toward no significant difference in production.
  - d. Later studies have shown that significant overcrowding increases slug feeding resulting in an associative reduction in time ruminating and laying down. This caused a reduction in milk yield and milk components. The additional time spent standing also caused an increase in foot and leg problems.
3. Feed bunk management was also an indicator of performance.
  - a. Herds that fed enough TMR to ensure refusals averaged 3.5 pounds more milk per cow (64.1 versus 60.6).
  - b. Those whose feed was pushed up at least two times a day averaged 8.7 pounds more milk than cows in herds where feed was not pushed up (63.7 versus 55.0). There appeared to be no advantage to pushing up more than twice a day. The important issue was to have feed within reach of the cows at all times.

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**Gordy Jones (2014) identified stall design and stall management parameters that would help in making cows more comfortable. Comfortable cows are happy cows, and happy cows make more milk.**

1. Free stalls need to be designed so that today's larger cows have adequate space. To milk well, cows should spend 12-14 hours/day laying down. For every additional hour resting, 3.7 pounds more milk is produced (Grant 2014).
  - a. The neck rail should be 66" from the stall's rear curb and 44"- 46" above.
  - b. Stall loop design should permit unimpeded lunge space so cows are able to stand without hurting themselves or their herd mates. When a 28" loop is used, forward lunge space is not as important.
2. Stalls need to be adequately bedded so that cows stay clean and dry.
  - a. Low organic matter bedding will prevent the spread of infection, absorb moisture, and prevent friction.
  - b. Sand is a popular solution. Many herds have experienced significant improvements in herd health and production by switching to it.
    - i. 40-70 pounds needs to be added/stall/day
    - ii. Should be level with the curb then slope up to the front at .25"/ft.
3. Cows need lots of fresh dry air.
  - a. Holsteins breathe out 5 gallons of moisture/day. Without adequate ventilation, this creates a warm moist environment which is perfect for bacterial growth.
  - b. Comfort zone for cows is 25°F - 65°F.
  - c. 10' high side walls with curtains are best for natural ventilation.
  - d. In warm weather, mechanical ventilation is necessary to move moist air out and to provide evaporative cooling.

**At the 2014 Dairy Day at Miner Institute, Rick Grant identified several additional non-nutritional guidelines:**

1. Optimal stocking density is dependent upon the number of rows of free stalls across the barn.
  - a. 4 rows – ideal stocking density = 115% – 120%
  - b. 6 row = 100% (most popular barn in northeast)
2. When cows are fed twice versus once a day, they perform better.
  - a. Dry matter intake increases by 3.1 pounds/day
  - b. Milk yield increases by 4.4 pounds/day
3. Feed sorting (Sova et al., 2013)
  - a. Each 2%-unit increase in refusals is associated with a 1.3 % increase in sorting.
  - b. Milk/dry matter intake decreases 3% for every 1% increase in sorting.

Many of these non-nutritional issues cost little or nothing to address. If cows can be made more comfortable and/or enabled to eat more, they will produce more. Not a bad return for the investment! However, if we attempt to resolve management with the addition feed additives, this will require an investment which will probably not yield a return.