

Nutrition: Is there any association with high SCC in fresh cows?

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Fresh cows are big contributors to high bulk tank somatic cell counts. Dry cow therapy, a clean environment and transition management are key management steps to head off problems. Also critical is ensuring cows get adequate nutrition, including micronutrients, to improve immune response.

Cows calving with high somatic cell counts (SCC) are high contributors to the bulk tank somatic cell count (BTSCC). The cow makes a big effort to adapt to new challenges occurring between late gestation and early lactation; feeding cows appropriately during this transition is challenging.

This period is critically important to dairy cow health, production and profitability. Moreover, an adequate udder's immune response to fight against infections that may occur around calving is expected.

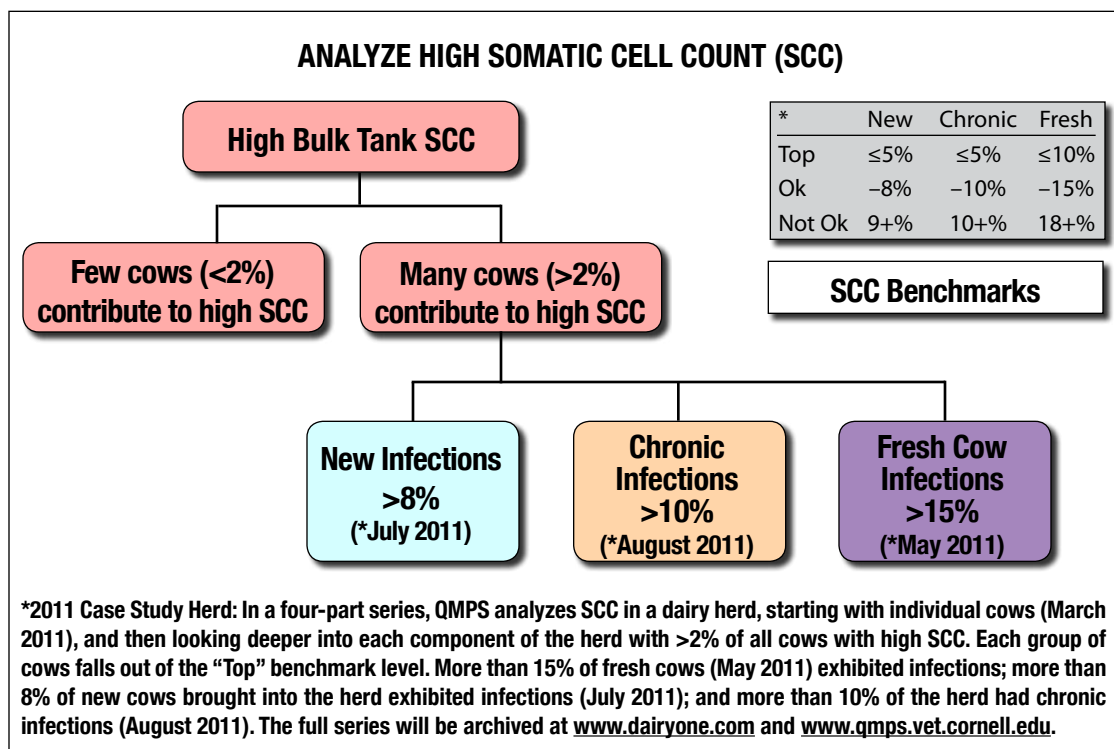
The objective is to have as few infected quarters as possible, but the immune response can be negatively hit by nutritional imbalances around calving.

In summary, targeting a specific ration for fresh cows also improves the efficiency of initiating them to a healthy lactation. Monitoring and recording daily observations and indices offers the best approach to detecting problems and determining the appropriate treatment. Your regional Dairy One marketing manager,

QMPS laboratory or milk inspector can provide more information on how to evaluate udder health around calving.

Case study: Where the Sun Rises farm

The analysis of SCC pattern and information about clinical mastitis in fresh cows is a great tool to monitor the level of infection in fresh cows. Infection levels and mastitis cases in the first 30 days in milk from "Where the Sun Rises" farm can give you a better idea about using that information as a decision tool. The western New York farm currently milks 280 cows. Dry matter intake is based on actual milk yield; inorganic minerals are added daily to the mix. Bred heifers are on pasture from May until mid October, if weather allows. In No-



vember 2010, a sudden increase in average SCC at first test day in first lactation heifers caught the farmer's attention (*Fig. 1*).



Figure 1. Test day average SCC in first lactation heifers in the last year. Calculation includes milk from all heifers, including sick and treated heifers whose milk is withheld from the bulk tank.

The HiFresh rate in this group of animals was higher than 15%, and it can cause an increase in the HiFresh rate across the herd (*Fig. 2*).

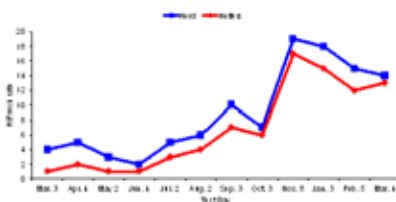


Figure 2. Test day HiFresh infection rate for the herd (Blue line) and for first lactation heifers (Red line). HiFresh infection rate measures the infections that occur during the dry period and shortly after calving. In November, HiFresh rate in heifers increased.

Clinical cases of mastitis in the first week of lactation increased also (*Fig. 3*).

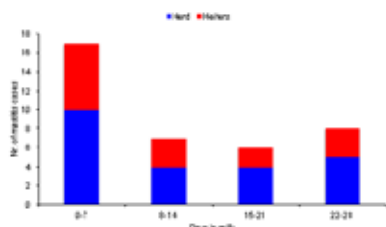


Figure 3. Total number of mastitis cases in the first month of lactation in the herd (Blue column) and in heifers (Red column). The percentage of mastitis in the first 30 days was 8.2% (herd) and 16.2% (heifers).

There were no concerns when evaluating milking routine and procedures, and milking system performance. However, 25% of fresh heifers and cows did not meet the recommended guideline for cleanliness and hygiene of the udder. An analysis of pasture and feeding was suggested. Pasture Se concentration was lower than 0.05 ppm (Summer 2010). The overall content of Se in the heifer's diet was 0.10 ppm, which is one third of the current recommendation for Se intake in dairy cows.

Udder cleanliness and hygiene, and a lack of Se and/or Vitamin E in the diet may be significant contributors to the increase in the HiFresh infection level and mastitis cases in "Where the Sun Rises" farm. Selenium and Vitamin E and SCC are critical nutrients for providing a healthy and fully functional immune system for cattle, particularly in grazing heifers and transition cows.

Nevertheless, providing an adequate and clean environment will contribute towards reducing the incidence of environmental mastitis in heifers and cows around calving, along with attention to other nutrients (calcium, copper, zinc and Vitamins A, C and E) (*Table 1*).

Table 1. Concentration of nutrients recommended in rations for far-off dry cows and close-up cows.

Nutrient (DM basis)	Dry period	
	(far-off)	Close-up
Calcium (%)	0.50	1.10
Copper (ppm*)	12-14	14-16
Selenium (ppm)	0.3	0.3
Zinc (ppm)	55-75	75-85
Vit. A (thousands/day)	85-100	85-100
Vit. E (thousands/day)	1-4	1-4

*To convert trace mineral units: 1000 ppm (mg/kg)=0.1%.

The analysis of a high HiFresh rate and more mastitis should include:

- **Dry cow therapy:** This is an effective method to eliminate existing infections.
- **Cleanliness of the environment** for far-off dry cows and close-up dry cows: Hygiene is directly related to risk for mastitis, particularly environmental mastitis.
- **Transition management:** Providing a comfortable environment for the cow will help improve milk yield and health.
- **Nutritional factors:** Providing adequate nutrients is necessary to minimize the risk of health problems around calving. Micronutrients like Se and Vitamins A and E play a role in improving immune response (*Table 1*).

DairyComp Commands

Farms that have access to Dairy Comp 305 can produce report similar to those provided above:

- **Fig. 1** (average SCC for each test date): PLOT SCC FOR LACT>0\R
- **Fig. 2** (table of infection dynamics): PLOT LS=4.5 by LS\YTRZ. (For first lactation heifers) FOR LACT=1.
- **Fig. 3** (mastitis cases by DIM): GRAPH MAST\I

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QMPS is a program within the Animal Health Diagnostic Center, a partnership between the New York State Department of Agriculture and Markets and the College of Veterinary Medicine at Cornell. The QMPS staff of veterinarians, technicians and researchers works with New York dairies to improve milk quality by addressing high somatic cell counts, milking equipment and procedures, and milker training in English and Spanish. QMPS also conducts research and teaching programs.

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Dairy One is an information technology cooperative, providing DHI records services and herd management software to dairies throughout the Northeast and Mid-Atlantic region. A comprehensive laboratory network provides milk quality testing as well as forage, soil, manure and water testing.

Contact Dairy One Cooperative Inc. at 730 Warren Rd., Ithaca, N.Y. 14850. Tel: 800-344-2697. Email: dmr@dairyone.com. Website: www.dairyone.com.

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