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Interpreting Individual Cow Somatic Cell Counts

Cooperative Extension South Dakota State University

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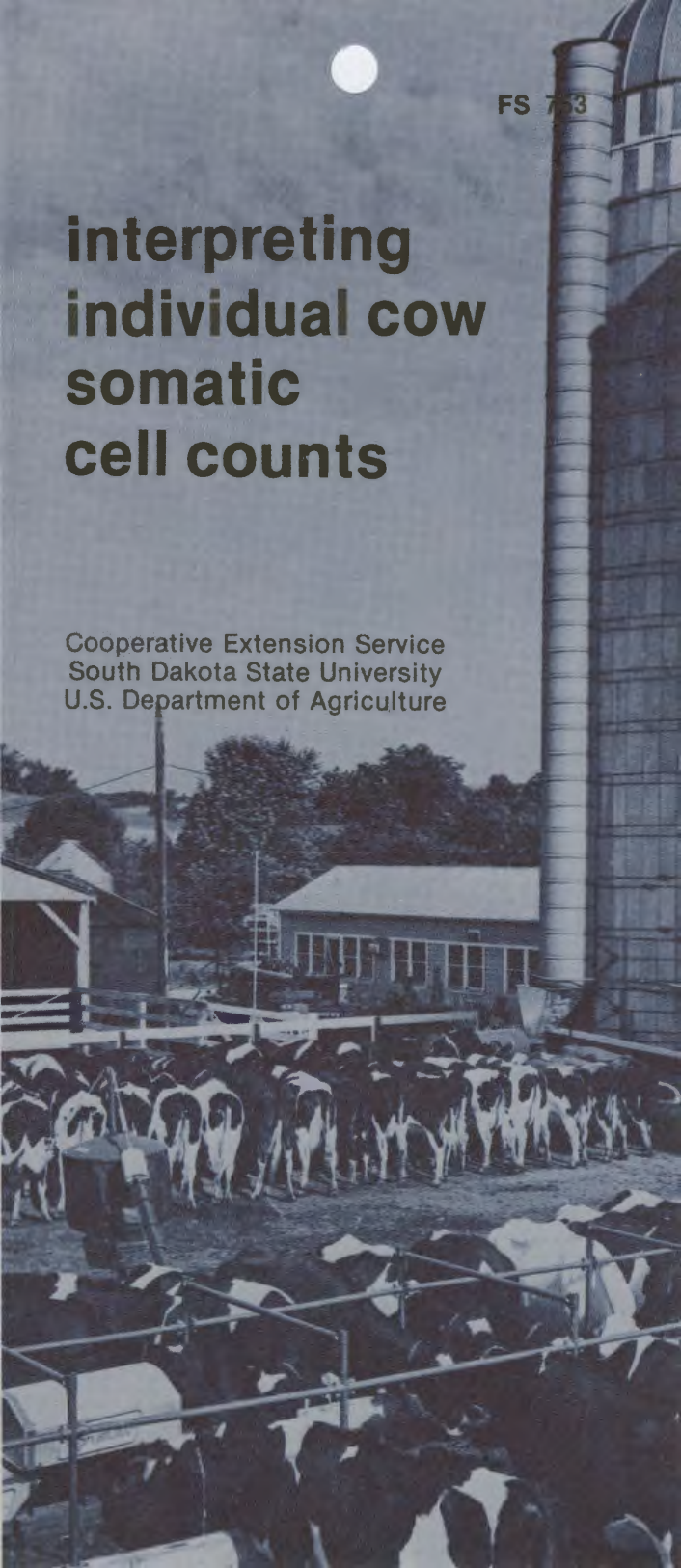

interpreting individual cow somatic cell counts

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Detecting mastitis through somatic cell counts on composite milk samples has created a lot of interest among DHI dairymen. How to interpret these reports has also caused some confusion.

Points to remember

1. Excluding counts taken the first week or last 2 weeks of lactation, most cows with cell counts between 500,000 and 1,000,000 are infected. The chances are 80% or greater that cows with cell counts above 800,000 have one or more infected quarters. This level indicates udder irritation with some loss of production.

2. **Age of the animal plays a very important role in interpreting cell counts on composite milk samples.** Second lactation and older cows with cell counts below 500,000 can generally be considered uninfected, although some infected cows may occasionally dip below this level.

First calf heifers normally freshen without mastitis and with low cell counts (100,000 to 350,000). The cell counts gradually increase as the cow becomes older and has been exposed to injury and infection. Therefore, higher cell counts—up to about 750,000—can be considered normal in older cows.

3. **Testing composite samples may hide an infected quarter.** Because of the dilution effect, an infected quarter shedding 1,000,000 cells may not be detected when the three healthy quarters have cell counts of 350,000 or less. In this case the composite sample would have 550,000 or fewer cells and the mastitis in the one quarter would probably go undetected.

4. The DHI composite cell count does not indicate which quarter or quarters are infected. The affected quarters can only be identified by use of the California Mastitis Test (CMT) or an equivalent test of individual quarter milk samples.

5. Treatment of infected cows, if effective, may cause cell counts to decrease within 10 to 14 days. However, depending on the organisms, several weeks may pass before the cell count approaches a normal level.

Cell counts may remain above normal throughout a lactation in a quarter that had a coliform or *Strep ag* infection in early lactation. If the treatment was successful, when the cow freshens again the count will be near normal.

It is also possible that the treatment will reduce the number of organisms and cells temporarily, but not eliminate the infection. One way to determine if the treatment was successful is to wait at least 10 days after treatment, then have a milk sample from the quarter cultured.

6. Cows (especially first and second calf heifers) with low cell counts may suddenly flare up with severe mastitis without prior warning. This occurs most frequently in the first 2 weeks after freshening.

These cases are usually caused by coliform (digestive tract or environmental) organisms. Cows with low cell counts seem to be particularly susceptible to these infections, which usually result from unsanitary environmental conditions such as wet bedding, mud, and manure.

7. Information is incomplete on factors other than infection, age, and stage of lactation that influence cell counts. Infection is the single most important cause of high cell counts. Other stresses such as a stepped-on-teat, udder injury, or systemic infections may cause high cell counts without udder infection.

8. Culturing milk for bacteria is the only way to determine whether a high cell count is due to infection or some other stress. Culturing milk from high-count cows will help guide both treatment and control procedures. Wait at least 10 days after the last treatment before taking milk samples for culturing.

9. A veterinarian should be consulted to evaluate cell counts and treatment of infected cows.

Dairymen must learn to accept that there are some forms of mastitis that do not respond to treatment even with modern "miracle" drugs and that prevention and culling are the only ways of eliminating such mastitis.

10. Individual somatic cell counts are also useful in selecting cows for dry treatment. Cows whose cell counts slowly increase through lactation (see cow 121, Table 1) probably have a low grade, subclinical infection. Dry cow treatment is often effective in eliminating this type of infection.

Cows that have been treated during lactation and whose cell counts remain high are also candidates for dry-cow treatment or culling, depending on the severity and chronicity of the infection.

11. Cell counts also can be useful to dairymen when purchasing lactating cows.

Table 1. Monthly cell counts in a sample dairy herd.

Cow	Fresh date	Age	Month			
			Aug	Sept	Oct	Nov
			Somatic cell count in hundred thousands (100,000)			
326	July	2 yrs	2	3	3	3
127	June	3 yrs	4	12	15	21
243	May	2 yrs	8*	3	2	2
83	March	8 yrs	8	7	8	8
92	June	9 yrs	25	28	25	30
121	April	5 yrs	4	5	6	7
36	August	4 yrs	6	3	2	3
201	May	3 yrs	16*	46	5	3

*Antibiotic therapy administered.

Cows with composite milk cell counts in excess of 800,000-1,000,000 cells should not be purchased. In addition, all purchased cows should be quarter-cultured before they are added to the milking string. Cows shown to have *Streptococcus agalactiae* or *Staphylococcus aureus* infections should not be placed in the milking string until the infection has been eliminated.

Sample counts and interpretation of them

Table 1 shows somatic cell counts you might expect in a dairy herd.

Cow 326: Young cow, recently fresh. Normal cell count should be 300,000 or less.

Cow 127: Young cow, obviously has picked up infection in September or October. Identify problem quarter or quarters and culture. Treatment may be based on culture result. Cow cannot wait until dry period for treatment.

Cow 243: Young cow with infection in early lactation and treated in August. Decrease in cell count indicates successful treatment.

Cow 83: Older cow, cell count is intermediate. No lactation treatment necessary. Dry cow treatment is necessary.

Cow 92: Older cow with chronic mastitis. Cull as soon as possible.

Cow 121: Slowly advancing cell count, late lactation. Dry cow treatment recommended.

Cow 36: Fresh 7 days when first somatic cell count run. Cell count may be slightly higher at start of lactation. Wait for next month's count.

Cow 201: August count indicates infection. Treatment occurred in August. September cell count taken 10 days after treatment. Cell count will normally increase after antibiotic therapy and remain elevated for days or weeks depending on bacteria involved. Therefore, disregard September count and wait for October, which in this case indicates successful treatment. For earlier information on results of treatment, quarter milk samples could be cultured 10-14 days after treatment.

Somatic cell counts on an individual cow basis can be a very useful tool in a mastitis control program. However, they must be interpreted correctly. Perhaps it is even more important to determine what factors are causing high counts and eliminate them. Treatment without correcting the cause is a waste of time and money.

Photo courtesy of Jim Baird, *Hoard's Dairyman.*

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