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Alberta Dairy Management

PREPARED FOR AND DISTRIBUTED BY THE DAIRY EXTENSION ADVISORY GROUP

Profit from Monitoring Linear Scores

The most costly disease in dairy cattle is mastitis and the most accurate measure of udder health is the linear score (LS) of somatic cell counts (SCC). Estimates of mastitis costs in the US are $150 to $200/cow/year. Analysis of DHIA records indicates that the single most important factor accounting for milk production variation among herds is somatic cell count. Table 1 demonstrates the profitable relationship between low herd average SCC and net farm income.

Most dairymen can identify cows with *clinical* mastitis by signs of abnormal milk or inflamed udders. Clinical cows have LS 7 or greater. However, nearly 70% of the dollar loss to mastitis is due to *subclinical* mastitis, suggested by a linear score over 4 but less than 7. The only practical way to measure this 'hidden' mastitis is with routine somatic cell counting. Refer to your DHI Somatic Cell Counts User Guide for details of LS and SCC interpretation.

Important parameters to monitor

Individual cow linear scores

1 Individual cow TEST DAY LINEAR SCORES are the basic parameters that evaluate the degree of udder inflammatory response. Scores greater than 4 indicate significant damage occurring in the udder and permanent milk loss for that lactation. Scores of 7-9 should be considered serious. These animals require greater attention and are candidates for bacterial culturing, isolation, closer daily observation and possible culling if chronic and unresponsive.

2 LACTATION AVERAGE LINEAR SCORE gives a single value that represents an individual cow's udder health to date. This score helps to identify chronic problem cows and monitor treatment success. When culling, consider cows with the highest mean lactation LS as primary candidates.

3 CURRENT LACTATION MILK LOSS $ is only an estimate and should not be considered precise for each individual but it does help evaluate the economic losses from mastitis. The actual loss for individuals varies greatly and is heavily influenced by the type of organism causing the damage and the care given.

HERD AVERAGE LINEAR SCORE	NET FARM INCOME/COW
less than 200,000	517
200,000 to 299,999	470
300,000 to 399,999	400
400,000 to 499,999	369
more than 500,000	245

Table 1 : Results from a study of northeast US dairy farms showing a significant negative effect of high somatic cell counts on profit.

Herd linear scores

1 HERD AVERAGE LINEAR SCORE is one number that describes the herd situation. When the herd linear score is decreasing over several tests then progress is indicated. Lowering herd linear score by one unit each year is a realistic goal. A herd LS of lower than 4 is the objective. One or two very high cows in a mid-sized herd can cause the herd LS to jump significantly and the removal of several cows at the top of the PROBLEM COW LIST can markedly affect the bulk tank SCC. Comparison of herd average SCC with bulk tank SCC is not recommended because of the dramatic effect from day-to-day of a few cows with exceptionally high LS or the dumping of milk from clinical or treated cows.

2 AGE SUMMARY and STAGE OF LACTATION SUMMARY indicate the number and % of infected cows in each group which helps to pinpoint weakness in mastitis control. For example, a high percentage of cows freshening with LS >4 may indicate problems with dry cow therapy or dry cow housing. It is commonly thought that SCC normally increases with age and days in milk. Although this may be true for infected cows, our research indicates that the average LS for uninfected cows is nomally in the 3+ range at all ages and stages of lactation.

3 CURRENT LACTATION MILK LOSS $ is an estimate of the magnitude of the manager's problem and helps to focus requirements for management efforts and dollars. The dollar amount could indicate that professional help, additional employees or new equipment is justified.

4 ESTIMATED NEW INFECTIONS based on LS is an unresearched tool to evaluate the herd udder health and should be used with caution. Cows exceeding LS 4 for the first time are considered new infections. The total number of infected cows is influenced by two factors:

- the number of new infections, and;
- the duration of the infection.

If you control the duration of infections, but fail to control new infections, you will make little progress toward improved production. Identifying the beginning of a new mastitis infection helps to find its cause and can lead to the prevention of subsequent infections.

How to use LS to reduce mastitis

1 Watch the HERD AVERAGE SOMATIC CELL COUNT and HERD AVERAGE LINEAR SCORE on your Herd Summary Report. Decreases in these two parameters are signs of progress; increases indicate that action needs to be taken to identify the cause and prevent further increases.

2 Study the AGE SUMMARY and STAGE OF LACTATION SUMMARY to determine whether specific groups of cows are experiencing more infections than others.

3 After assessing the overall herd situation, study the LS of individual cows. In the PROBLEM COW LIST, look at the cows with a 1 under # TESTS > 4.0 and try to determine why they have become infected since last test. Cows that have 2 or more tests with LS > 4 are considered chronic and should be cultured. Examine the LS history of these cows. Whether new or chronic, the infected cows contributing the most to the herd average SCC are at the top of the PROBLEM COW LIST.

4 Identify how many cows at each test are LS 5 or greater and categorize them by lactation group. The number of cows that freshened with LS 5 or greater and the number that were 5 or greater at the last test before going dry should be tabulated. Then make a list of all cows that are 9's, another of 8's and another of 7's. These cows are watched and treated when clinical signs appear.

5 To attack an udder health problem, it is best to identify the bacteria causing the herd problem. Have a veterinarian or other trained person take aseptic milk samples from cows that have LS of 5 or greater and have not been treated for at least 5 days. These samples are cultured to identify the organism causing mastitis in the herd and to determine its antibiotic resistance. Some producers take milk samples aseptically from clinical cows before treatment and store these samples in a freezer until 10 or more are available for culturing.

With the LS herd history for individual cows, the results of the bacterial culture analysis, and case histories of problems in the herd, a mastitis control program can be designed with the emphasis on *preventio* . Treatimng cows does not greatly increase production or reduce new infections. It can sometimes reduce the severity of the disease and reduce future damage. The goal is to identify the weakness in the mastitis control program and correct the problem so that mastitis does not spread to healthy cows. The success of the control program is constantly evaluated by routine somatic cell counts.

Mastitis prevention

Here is a check list of procedures that reduce new infections and linear scores :

- ✓ Use dry cow therapy for all quarters of all cows turned dry.
- ✓ Have milking equipment checked by a qualified service agent twice a year.
- ✓ Reduce milking machine fall offs, squawks, and avoid machine stripping.
- ✓ Review milking practices and hygiene with a specialist. Don't use sponges, cloths, or high volume hoses to wash udders.
- ✓ Teat dip all cows (see article **4U1**).
- ✓ Keep cow udders clean between milkings - free stalls, bedded areas, lots and pastures should be clean and dry. Fence off mud holes, swamps and ponds; fill holes at the gates and exits with gravel. Bed frequently to keep udders dry and clean.
- ✓ Avoid injury to udders especially teat ends.
- ✓ Cull chronic problem cows that don't respond to treatment.
- ✓ Isolate high scoring cows in a hospital group, or milk high cell count cows last in stall barns. Alternatively, use a separate unit for infected cows.
- ✓ Identify the predominant organisms causing the herd problem by culturing 10 or more problem cows with linear scores greater than 7.

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