

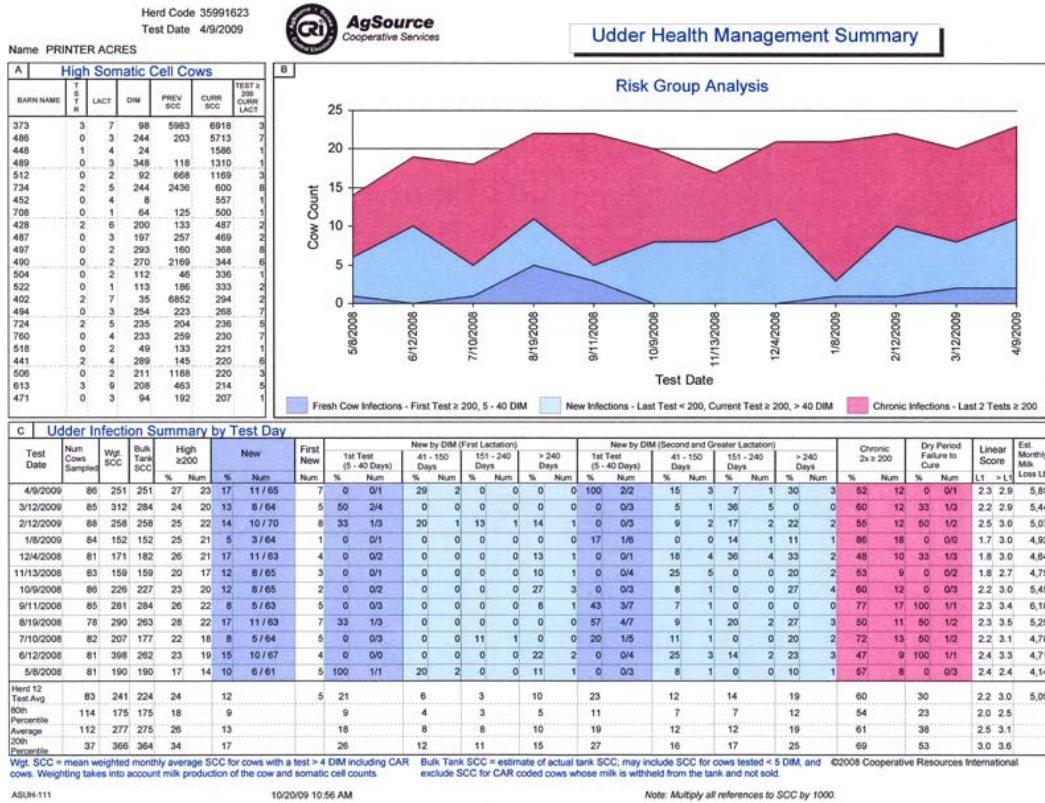
A Guide to Using AgSource Cooperative Services Udder Health Management (UHM) Summary[®] and Cow Report[®]

Introduction

The AgSource Udder Health Management Summary and Cow Report were developed through collaboration with the School of Veterinary Medicine, University of Wisconsin-Madison and its Food Animal Production Medicine Team, led by Dr. Nigel Cook and Dr. Ken Nordlund.

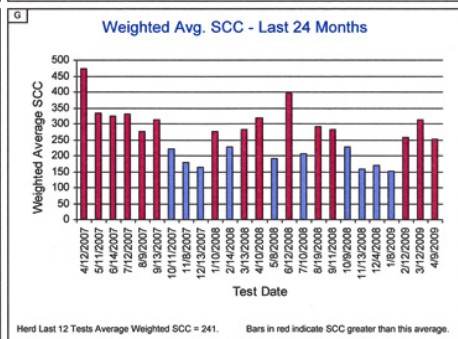
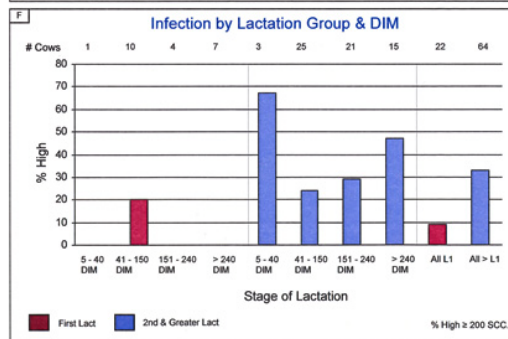
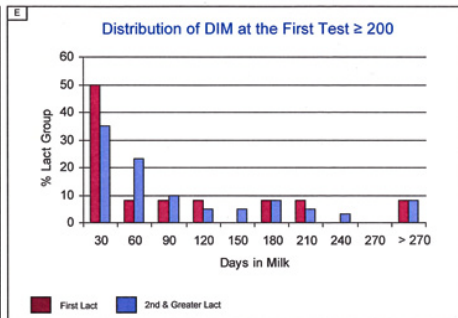
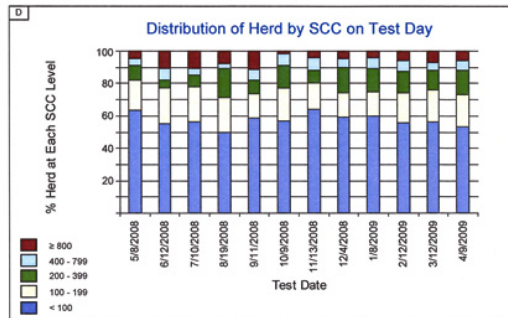
Throughout these reports, a cow with a somatic cell count (SCC) greater than or equal to 200,000/ml ($\geq 200,000$) is categorized as "Infected".

Click on the individual Blocks for explanations





Udder Health Management Summary



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Note: Multiply all references to SCC by 1000.

Block A

High Somatic Cell Cows

Block A lists the 24 highest Somatic Cell Count (SCC) cows on the current test. Other information provided for the cows on this list includes; barn name, string id (pen), lactation number, current days in milk (DIM), current and previous SCC test results and the number of tests in the current lactation ≥ 200,000. Percent contribution to the bulk tank is not included in this block. However, this information is provided for cows with two or more consecutive tests ≥ 200,000 in the "Udder Health Management Cow Report Block A, Chronic Cow List".

Block A provides a quick glance of the cows that currently have the highest SCC in the herd. It should not be used to make culling decisions, but it can be used to draw attention to the few cows with the highest SCC in the herd and to determine whether these are new infections or chronic infections, based on the number of tests ≥ 200,000 in the current lactation.

Block B

Risk Group Analysis

Block B is a graphic representation of the infected groups in the herd over the last 12 months. The graph reads from left to right, from historical to the most recent test date. The count (Y-axis) represents the number of cows in each risk group. A useful target would be to have the total count of cows represented on the graph less than 20% of the herd size.

The dark blue lower shaded area represents the Fresh Cow Infections and includes heifers with an SCC $\geq 200,000$ on their first test and the cows with an SCC $<200,000$ on the last test before dry off that have a first test $\geq 200,000$. The graphic provides an excellent visual of the herd's infection history. For more detail in a tabular format, cows in this risk group are listed in Block C "Udder Infection Summary by Test Day" under the 1st Test (5-40 Days) columns in both the New by DIM (First Lactation) and New by DIM (Second and Greater Lactation) columns. The same dark blue color is used in Block C to highlight these data making it easier to relate the graphical and tabular information. This format is used for all the risk groups in Block B

In all cases, "First Test" is between five and forty days in milk. Any cow or heifer in the above infected categories having their first test day after forty days in milk will go into the light blue area on the graph. Regular monthly testing allows the correct categorization of infected cows and maximizes the value of these reports.

The light blue area sandwiched between the red area and the dark blue area represents the cows and heifers having SCCs below 200,000 on their previous test, that are now $\geq 200,000$ on their current test. These cows are the "New Infections >40 DIM". Cows in this risk group are listed in Block C "Udder Infection Summary by Test Day" for both New by DIM (First Lactation) and New by DIM (Second and Greater Lactation) groups, divided by DIM ranges 41-150, 151-240 and >240 days. These columns are color coded with the same light blue.

The red shaded area includes cows $\geq 200,000$ at the previous test and $\geq 200,000$ on the current test. These are the Chronic Infections. A more detailed breakdown of this group is in Block C Udder Infection Summary by Test Day under Chronic $2x \geq 200,000$. Unique to the AgSource UHM reports, this risk group also includes cows that tested $\geq 200,000$ at the last test of the previous lactation that tested $\geq 200,000$ at the first test. These cows are the "Dry Period Failure to Cure" cows listed in Block C and are a subset of the Chronic Infections.

The total count of cows for each of the three risk groups represents all cows on test $\geq 200,000$. This is the herd prevalence of infection, which is equivalent to the "High ≥ 200 " column in Block C. The count of "New Infections and Fresh Cow Infections" is the sum of all new infections in the herd, which is equal to the "New Num" column in block C.

Block C

Udder Infection Summary by Test Day

Block C tabulates all the SCC information by test date. The table has the most recent test date at the top, and the most historic test at the bottom of the table. A total of 12 test dates are presented.

At the bottom of the table, where appropriate, Herd 12 Test Average data are presented and compared with the average, 80th percentile and 20th percentile performance for all herds that receive AgSource DHI services. For herds with less than 12 tests, the average will reflect the number of times the herd has tested. Using these benchmarks, comparisons can be made between current herd performance and the performance of the best and most challenged herds in the industry.

There are 11 major data fields in Block C.

1. "Test Date" gives the actual test date that the data is summarized for.
2. "Num Cows Sampled" lists the total number of cows with an SCC test at the each test date.
3. "Wgt. SCC" is the Mean weighted monthly average SCC for the cows with a test >4 DIM including cows that have a Condition Affecting Record (CAR) code for mastitis or other health reasons. The weighting takes into account the number of somatic cells produced and the test milk production of the cow. *Note that many other recording systems present arithmetic means (simple averages where a cow milking 150 pounds per day is included the same as a cow milking 25 pounds per day) of monthly SCC estimated from individual cow tests. Such means are always skewed by cows with very high SCCs and are difficult to interpret.*
4. "Bulk Tank SCC" is an estimate of actual bulk tank SCC. It is calculated in the same way as the weighted SCC, but producers have the ability to include cows tested <5 DIM that is going into the bulk tank and exclude the cows whose milk is being withheld from the bulk tank (bucket cows) that is not sold. There is a withheld indicator that is set in addition to any CAR coding. The CAR code affects whether the "40% rule" is applied and whether the milk reported is used to calculate the lactation or whether the milk is estimated based on the previous test. The withheld indicator affects the DHI milk weight to Bulk Tank Weight comparison and will also affect what milk and SCC are used to calculate the weighted bulk tank SCC. If milk is coded withheld, then that milk weight is not considered when calculating the DHI milk weight before the bulk tank percent is calculated (on the Herd Summary) and the milk/SCC for that cow will not be included in the Bulk Tank SCC. The aim of this adjustment is to predict the actual bulk tank SCC as closely as possible. *Large differences between the "Wgt. SCC" and the "Bulk Tank SCC" indicate a large number of cows being withheld - a situation worthy of investigation as it suggests milk from these cows is not entering the bulk tank.*
5. "High ≥ 200 " is the herd prevalence of infection. The column is subdivided into "%" and "Num" columns. The "Num" column represents the number of cows with an SCC $\geq 200,000$ and the "%" represents the proportion of the cows on test with an SCC $\geq 200,000$. This "%" column equals the "Num" column divided by the "Num Cows Sampled" multiplied by 100. *The "Num" column is equivalent to the total number of cows in all three risk groups in Block B. It will also equal the "New Num" column added to the "Chronic $2x \geq 200$ Num" column.*
6. "New" is the herd new infection rate. The column is subdivided into "%" and "Num" columns. The "Num" column represents cows whose SCCs were $<200,000$ on their previous test (including the last test of the previous lactation), with a current SCC test $\geq 200,000$. This number is most sensitive to herd milk quality interventions. The total number of new infections is characterized by their timing relative to DIM for first lactation and second and greater lactation risk groups, such that "New Num" will equal the total of all of the "Num" columns in each of the DIM risk groups. Both the numerator and denominator used in calculating the "%New" infections in the "Num" column. *Note that the new infection risk used in the UHM Summary does not use the population of cows on test as the denominator, rather, it uses the population of cows that tested $<200,000$ at the previous test that are the only cows eligible to get a new*

infection at the current test as the denominator. This will result in % that is higher than that seen in competitive UHM reports.

7. "First New" is the number of new infections that occurred for the first time in a lactation, whereas "New" includes first and repeat new infections in a lactation. First new will merely indicate to the user what proportion of the new infections occurred for the first time in a lactation.

8. "New by DIM" is presented for first lactation and second and greater lactation risk groups. The four DIM groups are 1st test (provided that the 1st test occurs between 5 and 40 DIM), 41-150 days, 151-240 days and >240 days. If the 1st test occurs >40 DIM, then any new infection will appear in the 41-150 day risk group. The "1st Test 5-40 Days" columns are printed in dark blue - equivalent to the dark blue area in Block B. The other DIM categories are printed in light blue, and are equivalent to the light blue area in Block B. Within each risk group, the "Num" column represents the number of cows within that DIM category that tested $\geq 200,000$ at the current test, that were $<200,000$ at the previous test (including the last test of the previous lactation for the 1st test category) and the "%" column represents the proportion of cows within each DIM and lactation category that are new infections. *For example, for the "New by DIM (Second and Greater Lactation)" risk group, the "% column under the "1st Test (5-40 days)" heading is the rate of new infections at first test by month for mature cows.*

9. "Chronic $2x \geq 200$ " identifies the chronically infected cows. These columns are printed in red and are equivalent to the red area for Chronic Infections in Block B. The definition of chronic infection used in these reports refers to cows that tested $\geq 200,000$ at the previous test (including the last test of the previous lactation) and $\geq 200,000$ at the current test. The total number of cows in this category is listed in the "Num" column. The "%" column is the proportion of the "High ≥ 200 Num" cows sampled at the current test that are chronic. Because cows with an SCC $\geq 200,000$ at the last test of the previous lactation are a sub-set of this number, the "Dry Period Failure to Cure" columns are also burgandy. The "Num" column actually shows the number of cows that failed to cure (1st test $\geq 200,000$) divided by the number of cows with a last test of the previous lactation $\geq 200,000$ and the "%" column represents this fraction. *Other recording systems fail to identify cows in their current lactation that were chronic problem cows in their previous lactation - they are mistakenly identified as new infections at first SCC test. The AgSource UHM reports correctly identify these cows as chronic at the first test of the current lactation.*

10. Linear score is presented for "L1" (first lactation) and ">L1" (second and greater lactations). This is the average linear score of all of the cows tested for each lactation group. *Note that the mean "Linear Score" is NOT equivalent to the "Wgt. SCC". The average of a number of SCC data is never the same as the average of a number of log data. For example, if your herd's linear scores are near the 80th percentile values yet your weighted SCC is only average, it suggests that you may have some high producing cows with high SCCs that skew the weighted average SCC upward, rather than having widespread subclinical udder infection throughout many cows in the herd. See Block D for more information.*

11. Estimated Milk Loss is calculated monthly from the number of cows in each parity (lactation) group (L1 and >L1) and the mean linear score for each group, multiplied by the lactation milk loss expected (given at the top left of the first page of the Udder Health Management Cow Report). The number is an estimate of the current pounds of lost milk production based on 305 day lactations.

Udder Health Management Summary, Page Two

The four graphs on Page Two of the report represent analyses of the SCC data presented on Page One, designed to answer four specific questions.

Block D

Distribution of Herd by SCC on Test Day

This graph is designed to answer the question *'When my herd SCC increases, is it due to a few cows with very high SCC counts, or a lot of cows with moderately high SCC counts?'*

The graph reads from left to right, historical to most current and divides the proportion of cows on test into one of five SCC categories; <100, 100-199, 200-399, 400-799 and ≥ 800 , based on each cows' test date SCC result. Each SCC category is color coded. Examine the % of herd tested in each category and note the trends and shifts over time between the categories.

This graph may be most useful in small herds of less than 80 cows, where very high SCC milk from a few cows can have a very significant effect on bulk tank SCC.

Block E

Distribution of DIM at the First Test ≥ 200

This graph is designed to answer the question *'For each lactation group, at what stage of lactation (DIM) do new infections occur?'*

Block E looks at only the first time a cow's SCC test is $\geq 200,000$ during a lactation, whenever this occurs. It is equivalent to the "First New" number included in Block C. The graph represents the proportion of all first time tests $\geq 200,000$ within a lactation categorized by the DIM of the event and "First Lact" or "2nd and Greater Lact".

For example, if the "30 DIM" column for "First Lact" reads 35% - that means that 35% of all of the first time new infections occurring in a lactation for first lactation cows occur in the first 30 DIM.

This graph serves to focus our efforts on the major risk periods during lactation when infections are arising and filters out repeat new infections.

Block F

Infection by Lactation Group & DIM

This graph is designed to answer the question "What is the prevalence of infection within each DIM category for first lactation and mature cows?"

The graph is coded red for first lactation and blue for 2nd and greater lactation cows with separate columns representing the proportion of cows in each lactation group within each DIM range with a current SCC test $\geq 200,000$. This is the prevalence of infections or % High. It does not measure new infections as described in the table in Block C.

Across the top of the graph marked # cows is the population at risk for each DIM category and for each lactation group. *This graph will provide a prevalence of infection for each lactation group and show how the proportion of infected cows changes with DIM and across lactation groups. In herds with an accumulation of chronically infected older cows, there will be a progressive increase in prevalence across the lactation and DIM categories.*

Block G

Weighted Avg. SCC - Last 24 Tests

This block is designed to answer the question *'Is my current month weighted average SCC greater than or less than the same month last year and what is the current SCC trend in the herd - greater or less than the mean annual average?'*

This graph reads from left to right and compiles the herd weighted average SCC for the last 24 tests. The annual weighted average is given in the lower left corner and bars which exceed this average are color coded red, compared to the blue bars which are below this average.

Because herd SCC trends tend to be seasonal, with higher counts in the summer and lower counts in the spring, it is difficult to determine whether herd improvements are being made. One simple method to see whether the herd is better off presently is to compare the current month's test with the same month's test the previous year. This graph enables that comparison.