

Dairy Comp and Using Milk Test Results

12.06

Fat, Protein and Somatic Cell information can be helpful in making decisions on individual cows, and in determining if management changes may be positively or negatively affecting the herd.

- Evaluate individual animals for infection and gauge their impact on the bulk tank
- Track the udder infection dynamics using SCC Linear Score changes across your herd.
- Track animal health and diet changes using Fat to Protein ratios.

Udder Health

- 1) High SCC cow list
- 2) Bulk Tank Impact
- 3) Infection Dynamics (Milking Herd)
- 4) Dry Period Infection Dynamics

A high SCC Linear Score means an animal is likely to have a mastitis infection. The higher her Linear Score, the more likely she is infected. By convention, an animal with a Linear Score of 4 or greater is considered “infected”. See Appendix V for more information on the relationship between raw SCC and SCC Linear Scores. Appendix II will display item definitions that may not be in your cowfile.

1) Make a High SCC list to make decisions on infected cows. One example follows.

LIST ID PEN DIM MILK NMAST LMAST RMAST RPRO DSLH DRYLS LS1 PLS LS
DOWNBY LS FOR LS>4

ID	PEN	DIM	MILK	NMAST	LMAST	RMAST	RPRO	DSLH	DRYLS	LS1	PLS	LS
368	10	221	49	6	1/31/06	SPC5RH	PREG	150	0	7.2	4.0	9.6
2665	1	201	66	12	1/25/06	ALBON	BRED	36	7.3	4.4	4.8	9.6
2881	10	407	29	4	1/31/06	PIR5LH	PREG	155	2.4	1.4	5.0	9.6
105	10	175	85	5	1/31/06	SPC5ALL	PREG	109	5.0	6.5	5.8	9.4
2732	4	212	82	1	10/ 5/05	SPC3LH	BRED	21	6.2	9.2	5.1	9.3
2837	5	224	97	1	11/ 1/05	SPC3RH	BRED	9	2.0	3.1	3.6	9.3
408	3	18	0	0	-	-	FRESH	0	0	9.0	0.0	9.0
2914	10	192	98	4	1/31/06	PIR5LH	BRED	24	1.7	2.6	5.8	8.7
216	1	290	52	2	1/16/06	PIR5RH	OK/OPEN	46	0	2.1	4.0	8.4
267	8	308	64	1	11/27/05	SPC3RF	BRED	17	0	2.2	4.9	8.4
2899	7	298	43	1	1/11/06	ALBON	DRY	241	3.1	0.5	3.1	8.2
2971	5	228	71	0	-	-	PREG	79	4.5	5.8	5.4	8.0
243	1	337	73	1	1/12/06	ALBON	BRED	22	0	2.6	6.8	7.9
2405	4	166	93	0	-	-	BRED	5	9.4	5.4	7.9	7.8
2276	1	401	49	0	-	-	NO BRED	0	4.7	3.4	5.4	7.7
2946	5	268	81	1	9/29/05	AMO3RF	PREG	45	4.1	3.7	7.4	7.7
516	99	19	0	0	-	-	FRESH	0	0	7.4	0.0	7.4
1951	2	74	99	0	-	-	BRED	3	7.1	5.4	5.4	7.4
2888	1	252	101	5	1/10/06	PIR5RF	BRED	33	4.8	4.7	4.8	7.4

This is a list that includes some production, clinical mastitis, and SCC LS information to help you determine if animals are chronic problems or new problems, if their clinical mastitis is cleared up following a treatment, and then consider what actions to take. These values will fill in as you test more for SCC.

Some questions to ask yourself as you look at animals on this list. Is this a new infection, or is the problem recurring. What is her most recent clinical, and did she clear up after treatment? Is this an infection she has carried through the dry period?

It is common for an animal to have a sudden high count on test day, and then her immune system cure the infection by the time you make this list. Be cautious in taking an action on a cow with only one high SCC count.

Some Actions to consider:

- Make her a Do Not Breed animal
- CMT to identify problem quarters
- Culture and then possibly treat (It is not recommended to treat animals without culture results as only certain infections respond profitably to treatment and many may already be taken care of by the animals' immune system).
- Dry off early
- Sell now

2) Bulk Tank Impact

Dairy Comp Command > ECON\S

Analyzing 1772 cows on Test Date 5/10/06

```
|-- Bulk Tank Today --|
Total Milk 155911      |----- Current Settings -----|
Average Milk 87        |Milk price 11.75
Bulk PctF 2.98         |Fat Base 3.5      Diff 0.15
Bulk PctP 2.85         |Ptn Base 3.2     Diff 0.12
                        |SCC Premiums enabled
```

```
Without any cows removed :      Bulk Tank SCC      288
                                Pay Price      10.79
                                Daily Income 16822.80
```

ID	MILK	Value	SCC	%Tank	Bulk Tank after removing only this cow from tank			Bulk Tank after removing cow and all cows above it		
					Price @SCC	Income		Price @SCC	Income	
1024	109	11.50	9999	2.4	10.78	281	16792.34	10.78	281	16792.34
2609	96	10.12	9999	2.1	10.79	282	16812.44	10.79	275	16800.68
819	91	9.60	9999	2.0	10.79	282	16812.98	10.79	269	16790.86
1679	82	8.65	9999	1.8	10.79	283	16813.95	10.79	264	16782.01
391	77	8.12	9999	1.7	10.78	283	16795.79	10.78	259	16755.05
450	126	13.28	6041	1.7	10.78	283	16790.51	10.78	255	16741.47
151	85	8.96	8323	1.6	10.78	283	16794.93	10.78	250	16732.31
1021	104	10.96	6747	1.6	10.78	283	16792.88	10.78	246	16721.10
7513	125	13.17	5243	1.5	10.79	284	16809.31	10.78	242	16707.62
1384	72	7.59	8155	1.3	10.79	284	16815.03	10.78	238	16699.86
7828	80	8.43	7157	1.3	10.78	284	16795.47	10.78	235	16691.24
2336	87	9.17	6275	1.2	10.79	284	16813.41	10.78	231	16681.87
164	63	6.64	8033	1.1	10.79	285	16816.00	10.78	228	16675.07
625	103	10.85	4578	1.0	10.79	285	16811.68	10.78	225	16663.97
236	45	4.74	9999	1.0	10.78	285	16799.24	10.78	222	16659.12
670	94	9.91	4771	1.0	10.78	285	16793.96	10.78	220	16648.99
7041	90	9.48	4126	0.8	10.79	286	16813.09	10.78	217	16639.29

This report lists animals in the order that they impact the SCC in the tank.

The top part of the report displays the theoretical tank SCC of 288,000 worth 16,822 per day based on the entered milk pricing. The milk pricing portion is seldom used – people do find the impact on the tank of interest.

Animal 1024 is contributing 2.4% of the tank’s SCC. If she was removed the new theoretical tank would be 281,000 SCC. The first column shows the impact of any one cow, the second column, on the right, shows the impact of withholding that animal, and all animals above her.

Economically – it can be risky to withhold an animal from the bulk tank as the value of her milk may not offset any gains in premiums and her actual infection state any give day will vary as her immune system fights the infection.

3) Herd Infection Dynamics

Command : PLOT LS=4 BY LS\RY

DCFARM1 ----- Dairy One ----- 1/16---

	T E S T D A T E S													
	118	216	317	419	517	621	718	815	919	1017	1121	1219	116	
Chronic %	12	12	13	13	15	15	15	13	14	17	14	15	19	
#	52	63	66	67	78	78	80	71	76	86	64	72	90	
New Inf %	8	9	6	10	9	13	6	12	12	10	12	10	10	
#	36	46	33	49	45	65	34	63	64	51	54	47	49	
Cured %	7	7	7	5	5	8	8	8	10	7	10	9	5	
#	32	34	36	24	26	42	42	44	55	37	45	44	22	
Clean %	73	72	74	72	71	64	70	67	64	66	65	65	66	
#	329	371	380	365	369	328	370	365	342	335	306	306	318	
HiFresh %	19	16	18	24	38	32	30	46	41	19	33	20	25	
#	21	9	11	15	23	24	16	25	14	6	16	10	17	
LoFresh %	81	84	82	76	62	68	70	54	59	81	67	80	75	
#	91	49	51	48	37	52	37	29	20	25	33	40	51	
Average	2.2	2.3	2.2	2.5	2.7	3.0	2.7	2.9	2.9	2.8	2.9	2.7	3.0	
#	561	572	577	568	578	589	579	597	571	540	518	519	547	

This is the report seen when you click the report tab (the tab between Grid and Graph towards the bottom of the screen) after running the command, (the graph tab will be displayed first).

Across the top are test dates. The most recent test is 1.16 and the previous test date is 12.19.

Based on the way we ran this command, animals are considered infected if they have a SCC Linear Score, (LS) greater than 3.9. if they are 3.9 or less they are considered uninfected.

On 1/16 – the last test listed

19 percent of the herd, or 90 animals were high last month and this month, and are considered chronically infected.

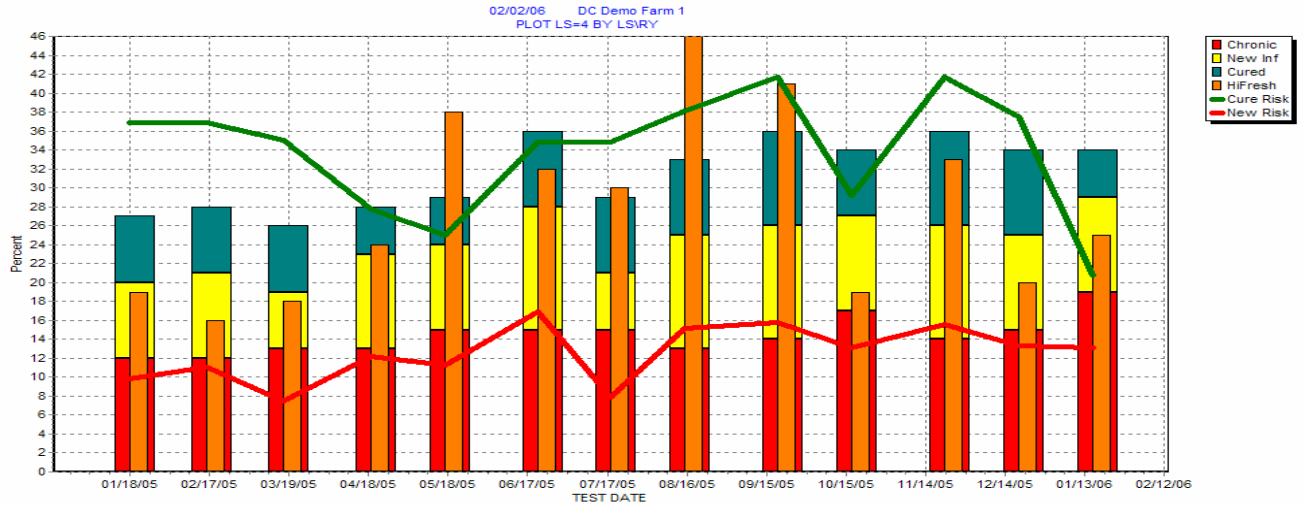
10% or 49 animals, were newly infected, meaning that they were low last month and are high this month.

5% or 22 of the animals were cured, meaning they were high last month, and are low this month.

25% of the fresh cows, were high this, their first test after calving, and 75% were low.

The current overall average Linear Score is 3.0 on 547 animals, up from 2.7 the previous month.

The graph tab (left click on the graph tab below) shows this information in a picture with two additional bits of information.



As the herd tests more times this graph will fill in with a stacked bar for each month as shown above. The red (bottom section shows the chronic level of infection in the herd. Note that your first month there not any chronically infected animals, because we did not have a previous test SCC. The yellow (middle) section are the newly infected animals the blue, top section shows the cures.

Two new bits of information on this are the cure risk, (green, top line) and new risk, (bottom, red line). The Cure Risk is the percentage of eligible animals that became cured (IE the percentage of animals that were infected last month and became uninfected this month). The New Risk is the percentage of animals that were not infected that became infected this month. If you “click” on the line it will show you the actual numbers.

Consider rerunning the report with the command `PLOT LS=4 BY LS\RY FOR LACT=1` to evaluate your just your first lactation animals .

4) Dry Period Infections

The Dry Period is the single most critical time for animals to get infected with Mastitis. It is also one of our greatest opportunities for cleaning up a sub clinical infection. So what is happening on this dairy?

First, confirm you have the Items DRYLS and LS1. (See appendix 1 for definitions).

Secondly, if not already being collected, change the DRY command to include `DRYLS=LS`

Thirdly, if not already present initialize the values with the command `EVENTS\7S DRYLS`.

Compare how animals calved relative to drying off.

<u>New Infections</u>	<u>*Percentile</u>	<u>Dry Cow Cures</u>
<7%	90 th	>82%
23%	Average	58%
>40%	10 th	<32%

** University of Wisconsin School of Veterinary Medicine staff from the AgSource Transition Cow Index Fresh Cow Summary Benchmarks*

```
SUM DRYLS=4 LS1=4 FOR DRYLS>0 LS1>0 FDATE>-365\B
```

This command asks FOR animals that have both a DRYLS and LS1, with a Fresh Date in the last 365 days, and the \B makes sure we include animals that have left the herd.

```
Command : SUM DRYLS=4 LS1=4 FOR DRYLS>0 LS1>0 FDATE>-365\B
```

```
----- Dairy One ----- 4/20/06---
```

	LS1 <4.0	LS1 >=4.0	
DRYLS >=4.0	76 17%	24 5%	100 22%

DRYLS <4.0	276 63%	62 14%	338 77%
=====			
	352 80%	86 19%	438 100%

This creates a “2x2” comparison table showing the various combinations of how animals dried off, and how they calved.

Animals below the horizontal line dried off “uninfected”, and those above the horizontal dried off “infected”.

Animals represented on the left of the vertical had a first test day “uninfected” and those on the right, were “infected” on their first test day.

In this example:

63% of the animals dried off low and calved low
 17% dried off high and calved low
 80% of the animals came through the dry period “uninfected”

5% dried off high and calved high
 14% dried off low and calved high
 19% came out of the dry period infected

After looking at this for the last year consider changing the FOR statement by adding FDAT>-180 to look at the animals that calved in the last 180 days.

If you wish to look at a specific dry period you can make the FOR statement control it by dry date with FOR DDAT=11.1.05-2.1.06 (for example) would run the summary for animals that dried off from 11.1.05 through 2.1.06.

Monitoring animal health and nutrition changes with Fat and Protein

Use the Item ratio to summarize the portion of the herd with a Fat to Protein of ratio less than 100. These are also known as Fat and Protein “inversion” animals.

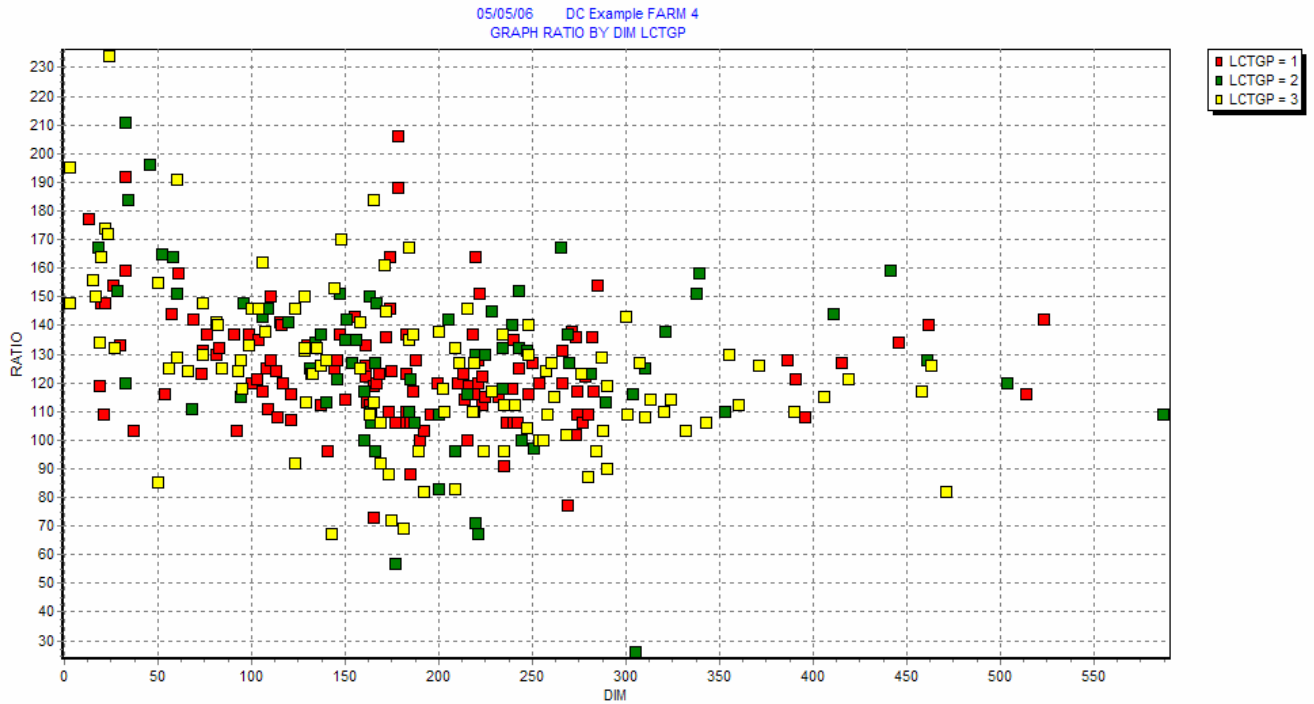
- Command : PCT RATIO<100 FOR RATIO>0 BY PEN

PEN	PCT	Count	Total
1	2	2	83
2	4	3	61
3	16	14	83
4	11	10	84
=====			
Total	9	29	311

In this example, 9 percent of the herd has a fat to protein ratio of less than 100 this month, (the percent fat is lower than the percent protein) with 2 percent of pen 1 low, and 16 percent of pen 3 low.

Consider adding % “Low” Ratios to your Monitor report so you can track the herd monthly.

GRAPH RATIO BY DIM LCTGP gives another way to look at Ratio.



Notice the low RATIO animals between 150 and 300 days in milk. Also notice the high ratio animals in early lactation. A very high fat percentage in early lactation may be caused by ketosis.

Fresh Cows with a High Fat test

Command : PCT PCTF>5 FOR DIMTD=5-35 PCTF>0

PCT	Count	Total
29	7	24

In this herd, this month, 29%, or 7 of 24, of the Holsteins that are less than 35 days in milk and have a current fat test have a fat percentage greater than 5. Watching this over time, could give a sense if the animals are starting out healthier, even before you can detect a change in clinical disease.

Appendix I Using Monitor

To begin tracking changes in Ratios of your milking herd Monitor can be configured as displayed below. Add the constraints as listed below, or of course call the support line for help. An absolute value for any of these may not be as important as when you see a significant change.

The Monitor Configuration

30	%Ratio<100	0 Pct	L RATIO<100	RATIO>0	
31	%FreshHiFat	0 Pct	L PCTF>5.0	PCTF>0	DIM<35
32	%FreshLwFat	0 Pct	L PCTF<3.0	PCTF>0	DIM<35

The Monitor display (just one month is shown)

#	Parameter	0505	Goal
=====	=====	=====	=====
29	POST-RECV	-----	-----
30	%Ratio<100	9	0
31	%FreshHiFat	29	0
32	%FreshLwFat	7	0

Appendix II

Items of interest:

Name	#	Loc/Op1	Len/Op2	Type	Description	(Alternate Name)
=====	=====	=====	=====	=====	=====	=====
AVLS	153	50	1	88	Average linear score	
DRYLS	180	112	1	8	Linear Score at dry off	(DRYLOG)
LS	99	-1	1	88	Log or Linear somatic cell	
LS1	181	1	1	88	Linear score first test	(LOG1)
PLS	112	-2	1	88	Previous test SCC Linear Score	
SCC	49	-1	0	88	Last test raw somatic cell count	
RMAST	104	MAST	-1	73	Remark of last mastitis event	
LMAST	103	MAST	-1	70	Date of last mastitis event	
NMAST	102	MAST		74	Number of mastitis events	
PCTF	54	-1	0	83	Last test date % Fat	
PCTP	53	-1	1	83	Last test date %Protein	
RATIO	186	PCTF	PCTP	110	Ratio of Fat to Protein	
MUN	196	-1	0	84	mun score last test	
LCTGP	151	LACT	3	109	lactation group	

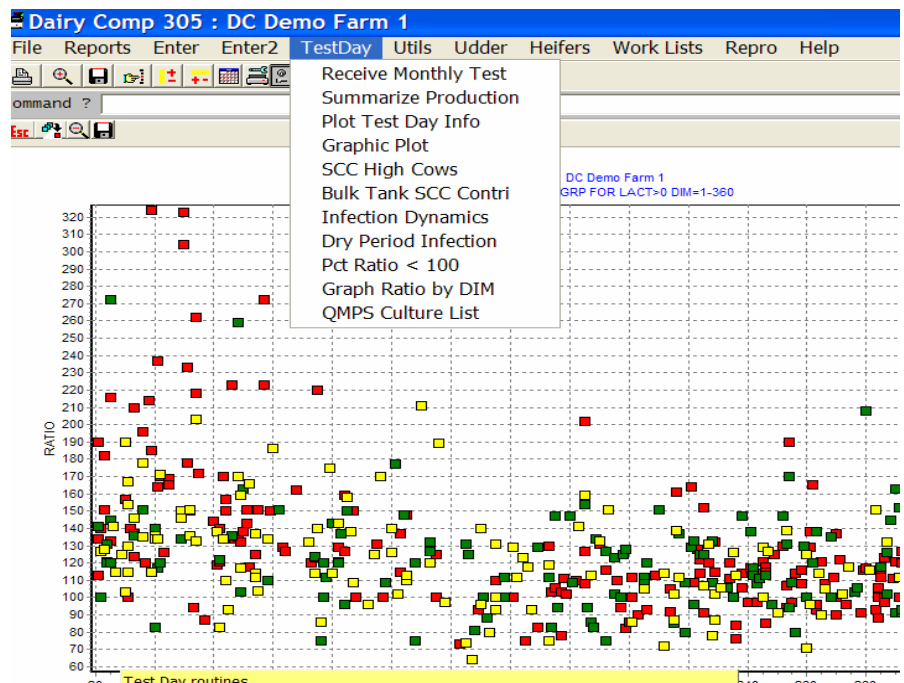
Appendix III

Commands you may want to save

Abbrev Content

```
=====
DRYINF  SUM DRYLS=4 LS1=4 FOR DRYLS>0 LS1>0 FDAT>-365\B
DRYITEM ID PEN RPRO LACT MAVG DIM TBRD TRIM DCC SCC ID
HIGHSCC LIST HIITEMS DOWNBY LS FOR LS>5
HIITEMS ID PEN DIM MILK NMAST LMAST RMAST RPRO DSLH DRYLS LS1 PLS LS
SCCDYN  PLOT LS=4 BY LS\RY
RATIOGR GRAPH RATIO BY DIM LGRP FOR DIM=1-365
RATIOLO PCT RATIO<100 FOR RATIO>0 BY PEN
```

Appendix IV Testday Menu



Adding the common functions to the Testday menu will make it easy to recreate the same reports each test day.

Appendix V

Linear Scores vs Raw SCC

When you are managing the Bulk Tank you must think in terms of SCC. When you are managing cows it is best to think in terms of the Somatic Cell “Linear Score”.

LS	SCC (thousands)
2	50
3	100
4	200 Generally accepted as the point where animals can be considered infected.
5	400
6	800
7	1,600
8	3,200 (This is 3,200,000 cells per milliliter)

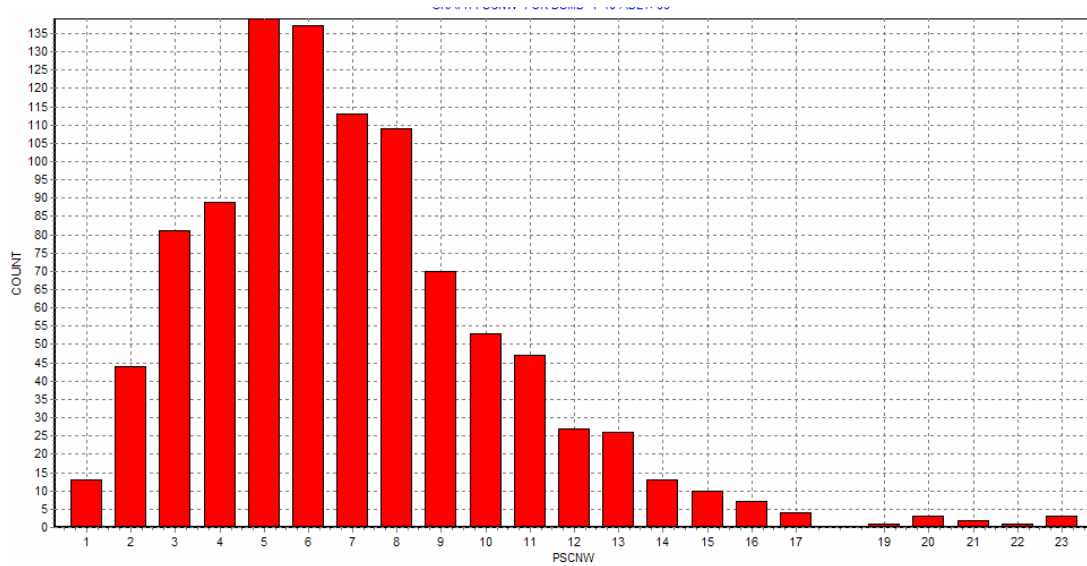
Notice that when the Linear Score changes by one, the SCC either doubles or halves.

To understand why LS is better for working with cows look at the example cow who had 9 low tests, and had one test she “popped” up in SCC. The average LS better characterized the quality of the animal’s udder health, than the average Raw Count.

Example Cow

<u>Test</u>	<u>LS</u>	<u>SCC</u>
1	2	50
2	2	50
3	2	50
4	9	6,400
5	2	50
6	2	50
7	2	50
8	2	50
9	2	50
10	2	50
avg	2.7	685

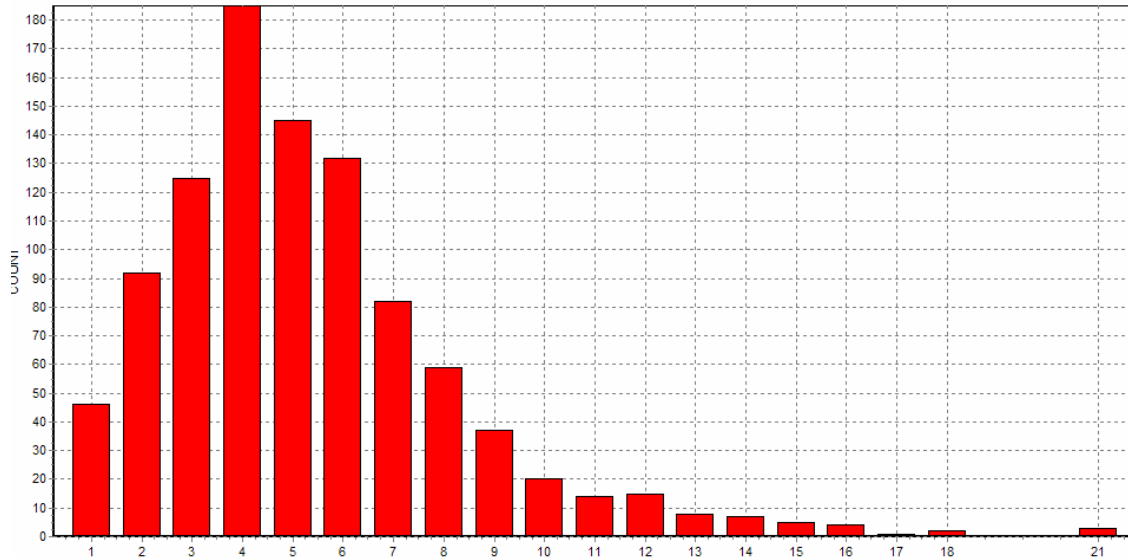
Percent new infections



Above is a histogram showing the distribution of 1006 herds, with more than 99 cows that tested in June of 2006, by percent new infections. The average percent of animals newly infected was 7% with a Standard deviation of 4.

It is pretty easy to see that 5% or 6% is the most common rate of new infections.

Percent Cured from the same set of herds.



The most common rate of cures was 4% with an average of 5% and standard deviation of 3.