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Using DHIA Records for \underline{k} Somatic Cell Count Management



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DHIA (Dairy Herd Improvement Association) records are an essential part of dairy herd management for many progressive dairy operations. The old adage "If you can't measure it, you can't manage it" holds true when it comes to dairy farm management, particularly when it comes to somatic cell count (SCC) management. When working with dairy farmers, we often hear the statement "I don't know how I would be able to manage my somatic cell count without my DHIA records." Recent market trends increase the need for managing SCC. More producers are now seeing the value of having monthly individual cow SCC; however, for producers new to DHIA, interpreting the meaning of all this information can be a bit overwhelming. Even producers who have been DHIA members for many years may not fully understand all the value that DHIA records can provide for SCC management. What follows is a description and interpretation of SCCrelated information available to dairy producers on DHIA test reports.

The "Hot Sheet"

The "hot sheet" is often described as the single most useful DHIA report provided to dairy producers. An example hot sheet is depicted in Figure 1 with column headings described in Figure 2. Although it can be a bit overwhelming to examine at first, the concept of the hot sheet is fairly simple. Each cow in the herd contributes somatic cells to the herd's bulk tank. How many cells an individual cow contributes is a factor of the somatic cell concentration within her milk (measured in cells per mL) and the volume of milk she produces. From DHIA testing, we have both SCC concentration and milk volume. So, each cow's contribution of somatic cells to the bulk tank can be calculated using these two pieces of

Hot Sheet

Mid-So	outh Dair	y Recor 41 sar			colle	* H ected	0T SH 4-28		test	1 age		
Index	Barn	Milk	Fat	Pro	SNF	MUN	SCC	Count	DIM	Lac CAR	B#	
Avg	41 cows	59.8	3.9	3.3	9.0		3.6		140			
Highe	st 20 SCC	Cows						Weighted	Aver	age SCC:	492	
Index	Barn	Milk	Fat	Pro	SNF	MUN	SCC	Count	DIM	Lac CAR	W/0	%
7	7SWISS	42.1	4.7	4.0	8.8		9.2	7352	12	1	373	25.6
56	56	30.2	5.3	4.6	8.3		9.0	6400	180	3	297	15.9
54	TESSY	81.5	3.6	3.2	8.7		6.9	1493	12	2	254	10.1
302	GLITTER	83.1	3.3	3.0	8.2		6.3	985	47	3	226	6.8
14	IZZIE	62.7	3.6	3.3	9.1		6.5	1131	145	5	200	5.9
457	NIKKI	81.4	3.2	2.9	8.1		5.9	746	34	2	179	5.0
554	AIDA	44.8	4.3	3.4	9.2		6.3	985	150	1	161	3.7
289	WHITCHA	61.7	3.2	3.2	9.0		5.4	528	308	4	149	2.7
68	5639556	85.1	4.0	3.0	8.8		4.9	373	15	1	139	2.6
17	M17	47.2	2.9	3.0	8.8		5.6	606	41	1	127	2.4
608	ELIZABE	36.1	4.1	3.2	8.9		5.8	696	107	2	116	2.1
47	PEYTON	68.2	4.8	3.3	9.0		4.8	348	117	6	106	2.0
35	SQUIRRE	58.0	3.8	3.4	9.3		4.7	325	50	1	99	1.6
	BGEORGE	66.2	3.0	3.1	8.7		4.4	264	162	2	92	1.4
113	BETH	72.4	3.4	3.4	9.0		4.1	214	316	3	86	1.3
4	GRACEFU	56.9	6.0	3.7	9.3		4.4	264	204	4	80	1.2
285	ANN	60.5	4.2	3.7	9.2		4.3	246	210	4	72	1.2
42	42	76.0	3.6	3.3	9.1		3.7	162	28	1	67	1.0
86	86	65.3	2.4	3.1	8.9		3.9	187	26	1	61	1.0
282	WITCHIE	68.1	3.9	3.1	8.6		3.7	162	137	3	55	0.9

Figure 1. An example of a DHIA hot sheet.

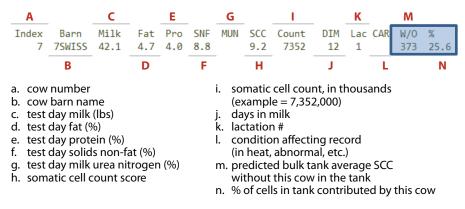


Figure 2. DHIA hot sheet column heading terminology descriptions.

information. A "weighted average SCC" is calculated for the bulk tank using this information from all cows. Then, using the cells contributed by each cow and her milk production, the percentage of cells in the bulk tank for each cow is

calculated. Cows on the hot sheet are ranked, with the cow contributing the most cells in the tank on the top of the list and the cow contributing the least cells in the tank on the bottom of the list. The column farthest to the right on the



hot sheet shows the percentage of cells in the tank from each cow in the herd. Moving left, the next column lists what the weighted average bulk tank SCC would be without that cow and all cows above her in the bulk tank. For most producers, these are the only two columns that need to be examined, though the other columns may provide additional useful information such as that cow's somatic cell count (in thousands) and milk yield.

Let us walk through an example using the information provided in Figure 1. For this herd, the weighted average SCC was 492,000 cells/mL. Cow 7 contributed the most somatic cells to the weighted SCC average. Her SCC was 7,352,000 cells/mL. She was responsible for 25.6 percent of the somatic cells in the bulk tank. Without including her in this average, the weighted average SCC for this milking would have been 373,000 cells/mL. Cow 56 contributed an additional 15.9 percent of the cells with a SCC of 6,400,000. Without these top two cows (Cows 7 and 56) the weighted average SCC for this milking would have been 297,000 cells/mL. We can quickly see the impact that only two cows had on the herd's SCC. Cows with particularly high SCC or high milk production with moderately high SCC can have a huge impact on herd SCC, particularly in small herds. With larger herds, the impact that one cow has on SCC is smaller because this milk is diluted by the milk from other cows. This information can prove very valuable for dealing with a short-term high SCC problem.

It is important to discuss a few limitations of the "hot sheet."

- The numbers reflect the samples collected from and the milk production of the cows on that particular milking on test day. SCC fluctuates considerably among individual cows from milking to milking.
- The weighted average SCC may not match bulk tank SCC exactly because of differences in cows tested versus those included in the bulk tank and the fact that cows are sampled at one milking of the two or four milkings included in the bulk tank. For example, if cows sampled on DHIA test are treated and their milk withheld from the bulk tank, differences between the two herd SCC measures may occur.

• If the highest SCC cows are removed from the herd, other cows will take their place on the top of the list. Part of this is just simple math indicating that a cow will be the highest SCC cow in the herd.

Nevertheless, it is also important to realize that eliminating high SCC cows is only an emergency treatment of the problem without getting at its root cause. If you only focus on removing high SCC cows from the herd without determining why these cows have high SCC and how to incorporate preventive practices, you will continue to cull or dump milk from top SCC cows test after test. To fully benefit from the DHIA hot sheet, you may want to consider collecting milk samples for bacteriological culture for all cows with SCC greater than 200,000 for two consecutive months or at least the top 10 or 20 cows on the list. This practice would provide valuable information for developing prevention strategies and making individual cow treatment or culling decisions. Don't be too quick to cull high SCC cows; make decisions based on multiple SCC and trends instead of a single cell count for a particular cow. The use of three consecutive monthly SCCs improves decision making, especially when combined with other cow factors such as age, stage of lactation, and time of year. First, check to see if high cows are chronically high SCC cows ("chronic cows" are defined as those with two consecutive months with a cell count >200,000 cells/ml in a single lactation). Those cows are the most likely culls. If the SCC is high on a single test, the cow may recover on her own or with the assistance of treatment.

DHIA Herd Summary

The DHIA herd summary (often DHI-202 for records processed by Dairy Records Management Systems in Raleigh, NC) also provides valuable herd-level SCC information. The areas where SCC is located on the DHI-202 are highlighted in blue in Figure 3. Note that some producers may receive their reports with SCS (somatic cell score) rather than SCC (somatic cell count). This herd summary provides useful information for diagnosing the source of increased SCC within a herd. For each test period (Figure 4) the herd production lost and the economic value of that milk are presented within the herd summary. Cows with a high SCC do not produce to their full potential, resulting in economic losses. This figure also presents the percentage of cows within various SCC concentrations or SCS by lactation number. This piece of information can be very useful toward distinguishing whether a mastitis problem exists in younger or older animals. If a higher percentage of first calf heifers have high SCC, prevention efforts should be focused on heifer rearing programs. If a higher percentage of cows with high SCC are observed in older cows, dry cow management and milking procedures may be examined. Finally, SCC distributions among SCC categories are also provided. Producers should strive to have greater than 85 percent of cows with SCC less than 200,000 cells/mL and less than 5 percent of cows with SCC greater than 1,130,000 cells/mL. In small herds, these numbers must be interpreted with caution because of the small number of cows represented in each category. A small herd makes it difficult to determine whether an observation is a herd or individual cow problem.

Figure 5 depicts SCC categorized by stage of lactation and lactation number for the current test. Again, this information can be useful for pinpointing the source of an SCC problem. If SCCs are highest in early lactation, dry and fresh cow management should be examined. If SCCs are low in early lactation but increase during lactation, milking procedures and lactating cow housing may be examined. SCC concentrations increase in later lactation because of reduced milk production, which increases the concentration of somatic cells. For each lactation category, the percentage of cows with SCC greater than 200,000 cells/ mL (SCS >3.9) is presented. Producers should strive to have less than 15 percent of cows in this category. Figure 6 depicts SCC trends by test date. This information can be useful for identification of the time frame when SCC began to increase (i.e. change in equipment, employees, or weather). Additionally, this information can be helpful for identifying seasonal trends in SCC.

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MILKING	3+ LAETS	4	5	1	2	1	13	3+ LACTS	13	5-03	3	4	6	2	4	+35		,	GNON-	-AI	C	URR	ENT	SON	ATI	Ç
	ALL LACT	s 21	42	18	23	19	123	ALL LACTS	133	3-02	2	27	45	6	25	+43				17				T SU		AR
AVERAGE	1KT LATT	60	64	61	49	42	58	NIDENTIFIE	D (PRODUCI)	IG FEMALE	\$1	20	34	NU CO	MILER HEFTRS I	N 13+ AGE	1	4 C	DCR N	ALK.	HERD	PRODUCE FROM 5	CTION	MILK -	5,	16
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DAT OF TES MONTH DF 3-27 4-22 5-26 7-01 7-23 8-28	HTED TE F ST IROPPED 7-09 2-09 6-09 1-09 3-09 8-09 4-09	24 SCC (1 DAYS N TEST PERIOD 30 28 26 34 36 22 36	21 NEARES NUMBER COWEN HERD DAY 114 119 121 120 117 116 115	33 T 1,00 MIL DAYS IN MILX 181 195 209 217 191 183 184	43 00) DAY AVEN UKING CC 4 n 1 5 5 7 7 1 3 4 4	26 RACES SWS AILK 57.6 56.6 57.2 56.0 56.2 59.5 52.8	28 YI STANDARD- 1200 1500 DAY MILK 63.7 60.6 62.5 64.0 62.5 64.0 62.5 64.7 65.4 58.7	ALL LACTATION EARLY PERIOP PRI	13 s 60 PRODUC 92 94 91 88 83 82 91	77 55 CTION TEST DAT GALL MILK 53. 53. 51. 48. 46. 48. 48. 48.	2 17 AVER/ cows9 0 2 2 3 9 3 2 6 1 3 0 2 3 0 2 3 0 2 3 0 3 3 0 3 3 0 3 3 0 3 3 0 3 3 0 3 3 0 3 3 0 3 3 0 3 3 0 3 3 0 3 0 3 0 3 0 3 0 3 0 3 0 1 0 1	8 35 MA ACES FAT 3.8 3.9 3.5 3.4 3.5 3.5 3.5 3.7	3 8 STITIS 3.2 3.2 3.2 3.2 3.2 3.1 3.1 3.1	SUMI 1977 1941 1909 1863 1825 1806 1792	1 52 4 MARY Rolling Yea Rolling Yea Fat 1 72 3 72 1 72 9 70 5 69 2 68 0 67 9 67	4 12 2 36 36 36 9807 7 600 3 594 7 583 0 574 2 571 5 570 1 570	0.12 192,00 193,00	1 4 HERD FC 3 3 4 4 1 2 1 2 1 4 7 1 2 1 4 7 1 2 1 4 1 2 1 4 1 2 1 4 1 1 2 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1	8 2010 20	ATTO OBLU 20 SCORE 3 Concert 1 1 1 1 7 9 10 5 6 1 10	20041 8 20041 8 200	5 2 6 2 4 2 3 2 7 3 12 3	7 20 20 20 20 20 20 20 20 20 20 20 20 20	NT. AV6 AcTUA- Scc 214 248 149 158 486 241 337	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	AGER HER SO
DAT OF TES 3-27 4-22 5-26 7-01 7-23 8-28 9-24 10-27	HTED TE F ST TROPPED 7-09 2-09 6-09 1-09 3-09 8-09 4-09 7-09	24 SCC (1 DAYS N TEST PERIOD 30 28 26 34 36 22 36 27 33	21 NEARES NUMBER COWS IN HERD ON TEST DAY 114 119 121 120 117 116 115 107 107	33 T 1,00 T 1,00 MILK DAYS IN MILK 181 195 209 217 191 183 184 199 217	43 00) DAY AVED IKING CC 1 5 3 7 1 3 4 9 7	26 RAGES WWSH 57.6 56.6 57.2 56.0 56.2 59.5 52.8 53.6 51.6	28 57 AVIDARD- 1200 150 DAY MILK 63.7 60.6 62.5 64.0 62.5 64.2 62.5 63.7 60.2 60.2 60.2	ALL LACTATION EARLEY PERIOD PERSIST. 1 03 1 03 5 98 1 05 2 105 2 100	13 s 60 PRODUC MILK 92 94 91 88 83 82 91 95 93	77 55 TEST DAT (4ALL MILK 53. 53. 51. 48. 48. 48. 48. 48. 48. 48.	2 17 AVEA cowss 0 2 2 3 9 3 9 3 9 3 9 3 9 3 9 3 9 3 6 3 1 3 0 2 2 3 6 3 1 2 3 0 3 2 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 2 2 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 9 3 3 6 9 3 3 1 9 1 1 1 1	8 35 D MA AGES FAT 3 3.8 3.9 3.5 3.4 3.5 3.5 3.5 3.5 3.7 3.9 4.4	3 8 STITIS 3.2 3.2 3.2 3.2 3.2 3.1 3.1 3.1 3.1 3.2 3.4	SUMI 1977 1941 1909 1863 1825 1806 1792 1787 1779	1 52 4 WARY ROLLING YEA ROLLING YEA FAT 1 72 3 72 1 72 9 70 5 69 0 67 9 67 9 67	4 12 2 36 36 PROT. 6 607 7 660 3 594 7 583 0 574 2 571 5 570 1 570 0 570	0.12 142.4 142	1 HERD FC 2 2 4 4 1 2 1 2 1 4 4 1 2 1 4 4 1 2 1 4 1 2 1 4 1 1 2 1 4 1 1 2 1 4 1 1 1 2 1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1	6 R INVOLU 2000 200 14 1 7 1 13 7 9 1 16 16 16 16 10 1	ATTO COLU 201 SCONE 5 10 SCONE 111 113 111 7 9 100 5 6 11 10 10 10 10 10 10	200411 8 100 100 100 100 100 100 100 10	5 2 6 2 4 2 3 2 12 3 5 2 7 3 9 3	7 20 2.9 2.9 2.5 2.5 3.3 2.8 3.3 3.3 3.3	×T. AV6 Actual Scc 214 248 149 158 486 241 337 455 404	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	AGER HER SO
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DAT TES 3-27 4-22 5-26 7-01 7-23 8-28 9-24 10-27 11-24 12-29	HTED TE F ST IROPPED 7-09 2-09 6-09 1-09 3-09 8-09 4-09 7-09 4-09 9-09	24 SCC (1 DAYS N TEST PERIOD 30 28 26 34 36 22 36 27 33 28 35	21 NEARES NUMBER COWS IN HERD CA TEST	33 T 1,00 TEST (MILL DAYS IN MILL 181 195 209 217 191 183 184 199 217 187 187 159	43 00) DAY AVEL L 5 3 7 1 3 4 4 7 7 7 9	26 MAGES WWS MILK 57.6 57.2 56.0 57.2 56.2 59.5 52.8 53.6 51.6 51.4 52.3	28 STANDARD- 1200 150 047 160 047 160 047 60.2 64. C 62. 5 64. C 62. 5 64. C 62. 5 64. 2 58. 7 60. 2 58. 3 58. 4	ALL ALL TALL OF THE STATE OF T	13 s 60 PRODUC 92 94 91 88 83 82 91 95 93 82 86	77 55 CTION TEST DAI 4ALL MILK 53. 53. 51. 48. 48. 48. 48. 51. 48. 48. 41. 44.	2 17 ANE cows 9 2 2 3 9 3 9 3 2 2 3 9 3 2 2 3 9 3 2 2 3 6 5 3 1 3 0 3 2 3 9 3 3 9 3 3 9 3 3 2 2 3 6 5 4 4 9 3 3 7 9 3 3 7 9 3 3 7 9 3 3 7 9 3 3 7 9 3 3 7 9 3 3 7 9 3 3 7 9 3 3 7 7 9 3 3 7 7 9 3 7 7 7 7	8 35 MA FAT 3 3.8 3.9 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	3 8 STITIS 3.2 3.2 3.2 3.2 3.1 3.1 3.1 3.1 3.2 3.4 3.4 3.4	SUMI MILK 1977 1941 1909 1863 1825 1806 1792 1787 1779 1767 1755	1 52 4 MARY ROLLING VEL TAT 1 72 3 72 1 72 9 70 5 69 0 67 9 67	4 12 2 36 36 Merry Add PROT 6 607 7 600 3 594 7 583 0 574 2 571 5 570 1 570 0 570 9 568 5 568	0 17 10 7 10 7 1	1 4 4 11 2 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4	6 2000 20 5 2000 20 6 2000 20 6 2000 20 6 2000 20 14 1 7 1 13 7 1 13 7 1 16 16 16 16 16 10 10 10 10 10 10 10 10 10 10	ATTIC OCU DI SCONT 5 SCONT	20041 S 27 4 5 4 7 5 1 7 1 5 1 7 4 1 5 1 1 5 1 1 5 1 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 1	5 2 6 2 4 2 3 2 12 3 5 2 7 3 9 3 6 3 6 3	7 20 00RE 2.9 2.9 2.5 2.5 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8	VT. AVG ACTUAL SCC 214 248 149 158 486 241 337 455 404 266 341	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	MGER HER SC
DAT OF TES MONTH OF 3-27 4-22 5-26 7-01 7-23 8-28 9-24 10-27 11-24 12-29 1-28	HTED TF F ST IROPPED 7-09 2-09 6-09 1-09 3-09 8-09 4-09 7-09 4-09 7-09 4-09 7-09 8-00	24 SCC (1 DAYS N TEST PERIOD 30 28 26 34 36 22 36 27 33 28 35 30	21 NEARES NUMBER COWS IN HERD CR TEST DAY 114 119 121 120 117 116 115 107 107 107 107 110 127 133	33 T 1,00 TEST (MILL DAYS MILL 195 209 217 191 183 184 199 217 187 187 187 187	43 DO) DAY AVEI UKING CC 1 5 3 4 5 7 7 7 9 6	26 MAGES WWS MLK 57.6 57.2 56.0 57.2 56.2 59.5 52.8 53.6 51.6 51.4 52.3 58.9	28 57 MUDARD- 150 DAY 150 DAY MILK 63.7 60.6 62.5 64.6 65.5 65.2 66.2 58.7 60.2 58.3 58.4 63.5	All All LACTATION TEST PERLY TEST PERLY 101 103 101 103 103 103 103 103 103 103 103 103 103 103 103 103 103 98 105 100 97 100 97 100 106	13 s 60 PRODUC 92 94 91 88 83 82 91 95 93 82 86 89	77 55 CTION TEST DAI 4ALL MILK 53. 53. 51. 48. 48. 48. 48. 51. 48. 41. 44. 51.	2 17 ANL 2 XOWS 0 2 2 2 3 9 2 2 6 2 2 2 2 2 2 2 2 2 2 2 2 2	8 35 7 8 8 8 8 9 8 3 9 3 5 3 3 9 3 5 3 5 3 5 3 5 3 5 3 5 3	3 8 STITIS 3.2 3.2 3.2 3.2 3.1 3.1 3.1 3.1 3.2 3.4 3.4 3.4 3.2	SUMI MILK 1977 1941 1909 1863 1825 1806 1825 1806 1792 1787 1779 1767 1755 1757	1 52 4 MARY ROLLING YEA ROLLING YEA PAT 1 72 3 72 9 70 5 69 2 68 0 67 9 67 8 66 4 67 6 68	4 12 2 36 36 Mer Add PHOT 6 607 7 600 3 594 7 583 0 574 2 571 5 570 1 570 0 570 9 568 5 568 2 568	0 17 H 0 H 0 H 0 H 0 H 0 H 0 H 0 H 0	1 4 4 11 2 1 4 4 4 7 7 1 0 1 8 1 6 1 8 1 6 1 8 1 6 1 2 5 1	6 Som som 2003 3 som 200 4	ATTIC OCU Solor Second Solor	200000 S 100 100 100 100 100 100 100 10	5 2 6 2 4 2 3 2 12 3 5 2 7 3 12 3 9 3 6 3 6 3 6 2	7 20 20 20 20 20 20 20 20 20 20	VT. AVG ACTUAL- Scc 214 248 149 158 486 241 337 455 404 266 341 242	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	MGER HER SC
DAT TES 3-27 4-22 5-26 7-01 7-23 8-28 9-24 10-27 11-24 12-29	HTED TF F ST IROPPED 7-09 2-09 6-09 1-09 3-09 8-09 4-09 7-09 4-09 7-09 4-09 7-09 8-00	24 SCC (1 DAYS N TEST PERIOD 30 28 26 34 36 22 36 27 33 28 35	21 NEARES NUMBER COWS IN HERD CA TEST	33 T 1,00 TEST (MILL DAYS IN MILL 181 195 209 217 191 183 184 199 217 187 187 159	43 DO) DAY AVEI UKING CC 1 5 3 4 5 7 7 7 9 6	26 MAGES WWS MILK 57.6 57.2 56.0 57.2 56.2 59.5 52.8 53.6 51.6 51.4 52.3	28 STANDARD- 1200 150 047 160 047 160 047 60.2 64. C 62. 5 64. C 62. 5 64. C 62. 5 64. 2 58. 7 60. 2 58. 3 58. 4	All All LACTATION TEST PERLY TEST PERLY 101 103 101 103 103 103 103 103 103 103 103 103 103 103 103 103 103 98 105 100 97 100 97 100 106	13 s 60 PRODUC 92 94 91 88 83 82 91 95 93 82 86	77 55 CTION TEST DAI 4ALL MILK 53. 53. 51. 48. 48. 48. 48. 51. 48. 48. 41. 44.	2 17 ANL 2 XOWS 0 2 2 2 3 9 2 2 6 2 2 2 2 2 2 2 2 2 2 2 2 2	8 35 MA FAT 3 3.8 3.9 3.5 3.4 3.5 3.5 3.5 3.5 3.5 3.5 3.7 3.9 4.4 4.4 4.6	3 8 STITIS 3.2 3.2 3.2 3.2 3.1 3.1 3.1 3.1 3.2 3.4 3.4 3.4	SUMI MILK 1977 1941 1909 1863 1825 1806 1792 1787 1779 1767 1755	1 52 4 MARY ROLLING YEA ROLLING YEA PAT 1 72 3 72 9 70 5 69 2 68 0 67 9 67 8 66 4 67 6 68	4 12 2 36 36 Mer Add PHOT 6 607 7 600 3 594 7 583 0 574 2 571 5 570 1 570 0 570 9 568 5 568 2 568	0 17 H 0 H 0 H 0 H 0 H 0 H 0 H 0 H 0	1 4 4 11 2 1 4 4 4 7 7 1 0 1 8 1 6 1 8 1 6 1 8 1 6 1 2 5 1	6 2000 20 5 2000 20 6 2000 20 6 2000 20 6 2000 20 14 1 7 1 13 7 1 13 7 1 16 16 16 16 16 10 10 10 10 10 10 10 10 10 10	ATTIC OCU S SECONE S SEC	20041 S 27 4 5 4 7 5 1 7 1 5 1 7 4 1 5 1 1 5 1 1 5 1 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 1	5 2 6 2 4 2 3 2 12 3 5 2 7 3 12 3 9 3 6 3 6 3 6 2	7 20 00RE 2.9 2.9 2.5 2.5 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8 3.3 2.8	VT. AVG ACTUAL SCC 214 248 149 158 486 241 337 455 404 266 341	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	MGER HER SC
DAT OF TES MONTH OF 3-27 4-22 5-26 7-01 7-23 8-28 9-24 10-27 11-24 12-29 1-28	HTED TE F ST IROPPED 7-09 2-09 6-09 1-09 3-09 8-09 4-09 7-09 4-09 9-09 8-10 5-10	24 SCC (1 DAYS N TEST PERIOD 30 28 26 34 36 22 36 27 33 28 35 30	21 NEARES NUMBER COWS IN HERD CR TEST DAY 114 119 121 120 117 116 115 107 107 107 107 110 127 133	33 T 1,00 TEST (MILL DAYS MILL 195 209 217 191 183 184 199 217 187 187 187 187	43 00) DAY AVEI LKING CC 4 8 1 5 3 7 7 7 7 7 7 7 7 7 3 4 4 9 7 7 7 3 3 4 4 9 7 7 7 3 3 4 4 9 7 7 7 7 7 7 7 7 7 7 7 7 7	26 MAGES WWS MLK 57.6 57.2 56.0 57.2 56.2 59.5 52.8 53.6 51.6 51.4 52.3 58.9	28 57 MUDARD- 150 DAY 150 DAY MILK 63.7 60.6 62.5 64.6 65.5 65.2 66.2 58.7 60.2 58.3 58.4 63.5	ALL LOCATION OF CONTRACT ON CONTRACT OF CO	13 s 60 PRODUC 92 94 91 88 83 82 91 95 93 82 86 89	77 55 CTION TEST DAI 4ALL MILK 53. 53. 51. 48. 48. 48. 48. 51. 48. 41. 44. 51.	2 17 ANLE 3 0 2 2 3 5 5 5 5 6 5 1 5 6 5 6 5 7 4 9 4 9 4 9 4 9 4 9 4 9 4 5 6 5 7 4 7 8 1 1 1 1 1 1 1 1 1 1 1 1 1	8 35 7 8 8 8 8 9 8 3 9 3 5 3 3 9 3 5 3 5 3 5 3 5 3 5 3 5 3	3 8 STITIS 3.2 3.2 3.2 3.2 3.1 3.1 3.1 3.1 3.2 3.4 3.4 3.4 3.2	SUMI MILK 1977 1941 1909 1863 1825 1806 1825 1806 1792 1787 1779 1767 1755 1757	1 52 4 MARY ROLLING YEA ROLLING YEA PAT 1 72 3 72 9 70 5 69 2 68 0 67 9 67 8 66 4 67 6 68	4 12 2 36 36 Mer Add PHOT 6 607 7 600 3 594 7 583 0 574 2 571 5 570 1 570 0 570 9 568 5 568 2 568	a.v.z retor re	1 4 4 3 1 1 2 1 4 4 7 1 0 1 8 1 6 1 8 1 6 1 8 2 0 2 5 1 1 1	6 500 30 5 cours 3 5 cours 3	13 13 11 7 9 10 5 6 1 10 10 10 10 10 10 10 10 10	20047 2 20047 2 2004 20047 2 20047	5 2 6 2 4 2 3 2 1 2 3 5 2 7 3 1 2 3 9 3 6 3 1 0 3 6 2 9 3 6 2 9 3	7 20 20 20 20 20 20 20 20 20 20	VT. AVG ACTUAL- Scc 214 248 149 158 486 241 337 455 404 266 341 242	12 NUN LEFT DIED 2 3 4 1 1	AGER

Figure 3. Back side of DHIA herd summary with areas with SCC management information highlighted in blue.

	CL CELL	JRREN	IT SO		RY	This represents how much milk income was lost because of
	LOST F	RODUCTIO ROM SCC EST PERIC % CO	č.	= {	166 388	elevated SCC
	0, 1, 2, 3 BELOW 142,000	4 142,000 283,000	5 284,000- 565,000	6 566,000- 1, 130,000	7, 8, 9 OVER 1, 130,000	Look for
1ST LACT	58	18	9	4	11	Differences by
2ND LACT	62	16	8	6	8	Lactation Number
3+ LACTS	73	18	9			
ALL	; 61	17	9	4	9	

Figure 4. Current somatic cell count summary with income losses and SCC breakdowns by lactation.

PCDart graphs

PCDart is a software program available to dairy producers on DHI test. For producers who have this software or work with a veterinarian or consultant who does, two graphs (Figures 7 and 8) provided by this program can be very useful. Both of these graphs can be accessed through the "Cow" graph button within PCDart. To create a graph like the one shown in Figure 7, select "Prev SCC vs Curr SCC." To create a graph like the one shown in Figure 8, select "Prlc Last SCC vs 1st SCC." After opening each graph, click the CrossHairs button on the bottom of the screen. Move both the horizontal and vertical CrossHairs to SCS of 4 (equivalent to SCC >240,000 cells/mL). This distinction defines all cows with SCC above this level as having mastitis. Each graph divides the herd into four quadrants. The upper right quadrant represents chronically infected cows or those with high SCC for both time periods. The upper left quadrant represents new infections where SCC was low for the first time frame and high for the second. The lower left quadrant represents consistently clean cows with low SCC for both time frames. Finally, the lower right quadrant represents cures where SCC was high during the previous time frame but low during the current time frame. Goals for each quadrant are listed in these graphs.

Figure 7 shows the SCC for the current and the last DHI test. This graph demonstrates changes in SCC from month to month. If a high percent of the herd lies in the chronic infections quadrant, preventive efforts should be focused on control of contagious mastitis and on milking procedures. These chronic cows should be cultured. If a high percentage of the herd is in the new infections category, changes in the environment or milking procedures should be examined.

Figure 8 depicts changes in SCC from one lactation to the next by comparing the SCC from the first test in a new lactation to the last test from the previous lactation. To an extent, this information provides an evaluation of the effectiveness of dry and fresh cow management. If too many cows are in the upper right quadrant, the dry cow program is not effective at controlling existing infections.

		-	STAC	BE OF LA	CTATION (DAYS)	
		1 THRU 40	41 THRU 100	10 1 Threu 199	200 Thru 305	306 +	TOTAL OR AVERAGE
	1ST LACT	283	334	358	147	288	312
scc	2ND LACT	205	295	597	264	60	318
ACT	3+ LACTS	69	38	174	117	230	77
	ALL LACTS	218	290	488	237	217	290
SCC	NUMBER	5	9	6	10	5	35
SCC SCORE > 3,9	number Percent	5 24	9 21	6 33	10 43	5 26	35 28

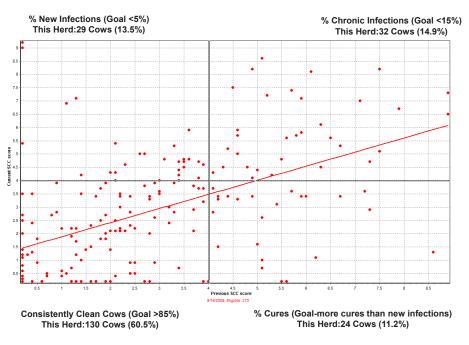
Figure 5. SCC distribution by stage of lactation for each lactation group.

DATE				CELL COU	NT SUMMA	ARY		
OF	0,1,2,3	*/ CO 4	NS SCC SC	XORE 6	7,8,9	AVG.	WT. AVG	
TEST	BELOW 142,000	142,000 283,000	284,000 565,000	566,000- 1.13 M	OVER 1.13 M	SCC SCORE	ACTUAL SCC	
MONTH DROPPED	64	14	13	4	5	2.9	214	
3-27-09	71	7	11	5	6	2.9	248	Look for
4-22-09	72	13	7	4	4	2.5	149	trends by season.
5-26-09	74	7	9	7	3	2.5	158	Check
7-01-09	64	9	10	5	12	3.3	486	when an increase
7-23-09	67	16	5	7	5	2.8	241	started.
8-28-09	60	16	6	11	7	3.3	337	
9-24-09	58	16	10	4	12	3.3	455	
10-27-09	66	10	10	5	9	3.2	404	
11-24-09	58	20	12	4	6	3.1	266	
12-29-09	60	20	5	5	10	3.3	341	/
1-28-10	65	15	9	5	6	2.9	242	
2-25-10	61	17	9	4	9	3.0	293	
AVERAGES	64	14	9	6	7	3.0	302	

Figure 6. SCC trends by test date.

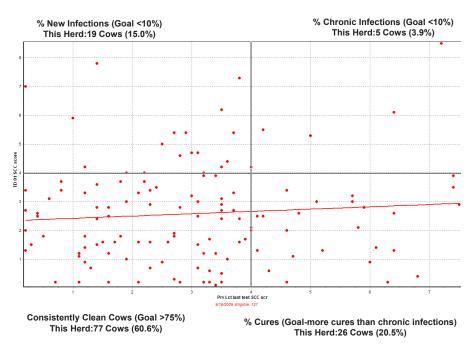
More problemetic would be scenarios where too many cows are in the upper left corner, indicating that cows developed new infections during the dry or fresh period. These situations would indicate a need to look at dry cow housing, environment, and preventive dry cow therapy, vaccination, dry cow nutrition, and calving facilities.

As you can see, DHI provides a wealth of information from each test period from that one test. Additional or alternative graphs and tables may be available from different DHI processing centers, but the concepts hold true regardless. This information can be extremely useful in efforts to lower SCC and diagnose SCC problems within a herd. Remember to consult with your veterinarian before changing any treatment or vaccination protocols to best target the pathogens responsible for an increased SCC. Remember that DHI testing is not for finding and culling the highest SCC cows each month in order to stay under the legal limit; rather it is a tool to help find the underlying causes of mastitis within a herd to help producers correct these problems. Prevention of mastitis is always more economical than treatments.



Current Versus Last Test SCC Score

Figure 7. PCDart Graph depicting distribution of SCC changes between tests.



First Test SCS versus Last Test in Previous Lactation SCS

Figure 8. PCDart graph depicting distribution of SCC changes between lactations.

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