NMR Herd Companion Information pack

NMR
individual cow management

Introduction

Herd Companion is the new information service provided online by NMR. It allows farmers and their advisors to view fertility and health information at a new level. The data displayed is particularly of use if the farmer or advisor has access to InterHerd, since the latest herd results can then be interrogated on an individual cow basis using the on farm software.

This information pack shows all the information that is available from the online service, with an explanation of the categories used to group cows' performance. NMR Herd Companion has two tiers.

Level one is a summary analysis, showing data at herd level for both protein deficit and cell count.

Level two shows a more detailed analysis of the individual cows that are contributing to the herd trends. Level 2 can also be used in multiple herds, for example if a Vet using InterHerd has several herds that he wants to view.

The Herd Companion system is available online all the time- www.nmr.co.uk and is accessed by a user name (the NMR herd number) and password. Herds have to be registered to receive a password. The service is automatically updated as herds record and no additional data is required.

For further information about the service, or to register your herd, please call NMR Customer Services on 08457 660236.

Level 1: Summary analysis

Fertility Monitor

There is a clear link between poor protein performance and longer calving intervals. This is because the level of protein production is an indicator of the energy status of the cow. Generally, lower protein production will be a precursor to loss of body condition (a sign of negative energy balance). In turn this affects the fertility status of the cow such that low proteins in early lactation can be a signal of likely problems in conceiving for that cow later in the lactation.

The Fertility Monitor graphs show the production that is sustainable at 3.2% protein. Using the protein intercept it is possible to identify cows that have protein deficits and then assess feeding strategy.

Figure one below shows a herd that has no problems with protein levels.

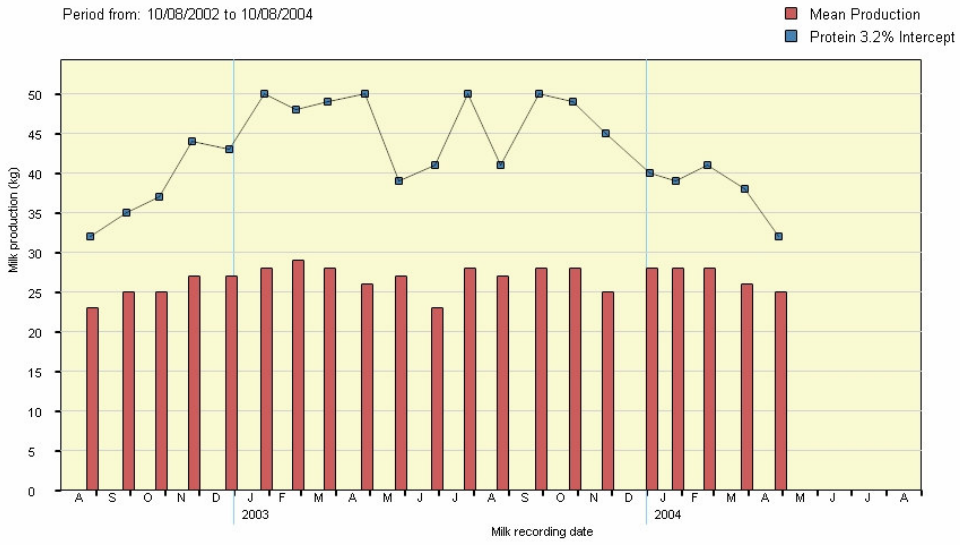

Figure 1: Protein intercept Herd I. No problems with feeding.

The cows that contribute to each month's value can be identified by clicking on the graph on a particular month. This will produce a new graph called Protein Deficit Indicator- see Figure 2.

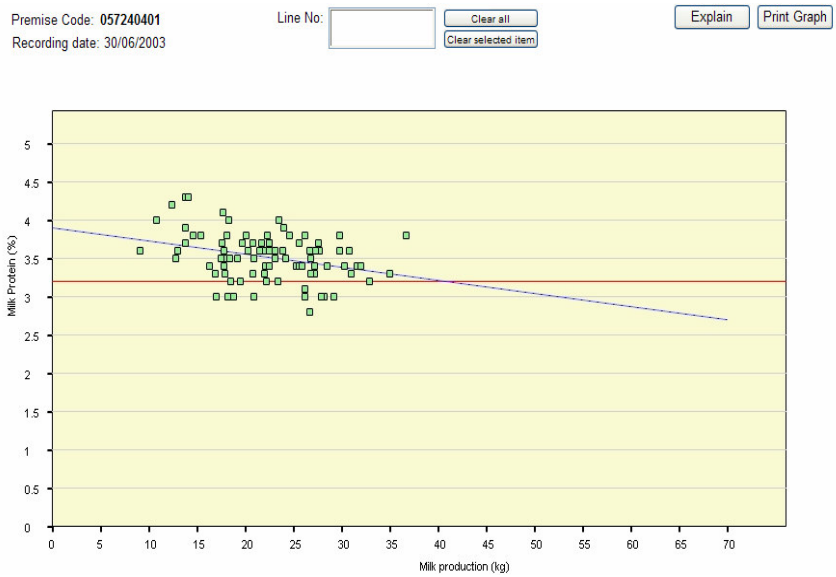

Figure 2: Protein Deficit Indicator. Herd I.

Each dot on this graph represents one cow. Those cows that fall below the red line i.e. below the protein intercept of 3.2%, are the ones that need attention. The user can click on each cow to produce a list of line numbers. In this herd however, there are only a handful of cows that fall into this category.

In figure 3, below, showing results for a different herd, the protein intercept has fallen below the mean production (the cows have fallen below 3.2% protein) in February 2004.

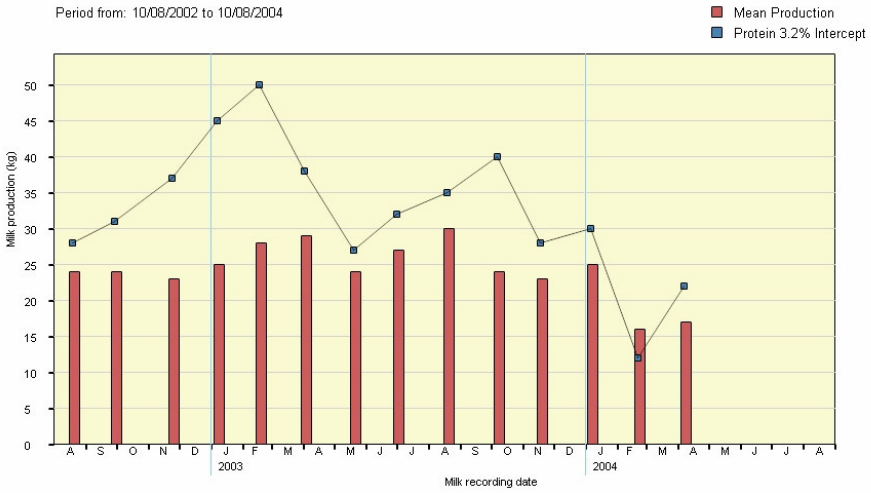

Figure 3: Protein intercept Herd II. Feeding issue in February 2004.

The month that has raised concern, in this example February 2004, can be examined more closely to identify the cows responsible.

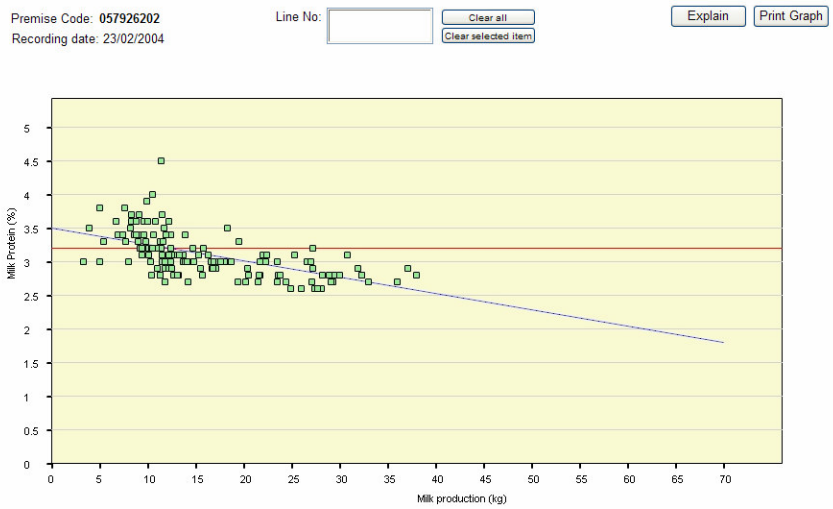

Figure 4: February 2004 Protein vs Production analysis: Herd II.

For notes on how to manipulate protein with feeding, see Appendix one.

Health Monitor

The health monitor tables display data taken directly from each milk recording. The data will always be up to date and no extra information is necessary. A threshold level is set for the herd at 200,000 cells per ml, however this can be changed to any value.

SCC Summary

Table one shows the cell count results for recordings over the last 2 years.

Table one: SCC Breakdown by recording date

SCC breakdown by milk recording date Threshold SCC: 200 ,000 Change

Recording Date	Cows milked	Herd SCC	% >200	Cows >200	New	First	Repeat	Chronic	First uninfected	Recovered	Uninfected
20/04/2004	**128**	**140**	**20 %**	**25**	**9**	**1**	**7**	**8**	**8**	**15**	**80**
16/03/2004	131	222	**15 %**	19	**3**	3	3	10	12	18	82
16/02/2004	144	97	**15 %**	21	**5**	1	3	12	6	24	93
19/01/2004	150	108	**13 %**	19	**4**	1	2	12	17	30	84
15/12/2003	132	176	**18 %**	24	**7**	3	2	12	22	20	66
17/11/2003	131	99	**18 %**	24	**5**	4	2	13	14	25	68
16/10/2003	118	116	**20 %**	24	**8**	2	5	9	21	21	52
18/09/2003	112	112	**13 %**	14	**3**	0	1	10	13	28	57
14/08/2003	118	152	**24 %**	28	**4**	1	1	22	7	24	59
16/07/2003	120	146	**27 %**	32	**8**	1	4	19	6	21	61
17/06/2003	123	143	**19 %**	23	**7**	0	4	12	3	24	73
15/05/2003	133	140	**16 %**	21	**3**	0	6	12	6	26	80
14/04/2003	131	175	**18 %**	23	**7**	4	5	7	7	25	76
18/03/2003	124	127	**15 %**	18	**5**	5	1	7	7	22	77
19/02/2003	124	106	**19 %**	24	**5**	2	7	10	13	16	71
16/01/2003	120	132	**15 %**	18	**4**	3	1	10	13	22	67
12/12/2002	121	133	**21 %**	25	**5**	3	2	15	10	19	67
14/11/2002	115	116	**20 %**	23	**3**	0	2	18	11	19	62
16/10/2002	112	154	**24 %**	27	**6**	0	3	18	5	18	62
16/09/2002	117	145	**25 %**	29	**5**	3	3	18	14	15	59
12/08/2002	122	208	**27 %**	33	**7**	3	2	21	14	16	59

The categories in the table can be explained as follows:

New: Number of cows recorded with an SCC level above the threshold value for the **first time in the current lactation** (excluding cows where the recording date is the first in the current lactation)
First: Limited to cows where the recording date is the **first** in the current lactation: Number of cows with SCC level above the threshold value.
Repeat: Number of cows with SCC level above the threshold value that were below that level at the previous milk recording date, having been above the threshold earlier in the current lactation.
Chronic: Number of cows with SCC level above the threshold value on the current recording date that also had SCC level above the threshold at the previous milk recording.

Recovered: Number of cows with SCC level at or below the threshold value that were above that level at the previous milk recording date.
1st Uninfected: Limited to cows where the recording date is the **first** in the current lactation: Number of cows with SCC level at or below the threshold value.
Uninfected: Number of cows with SCC level at or below the threshold value that were also at or below that level at the previous milk recording date.

The SCC Summary will display the data from the table in graphical form (see Figure 5).

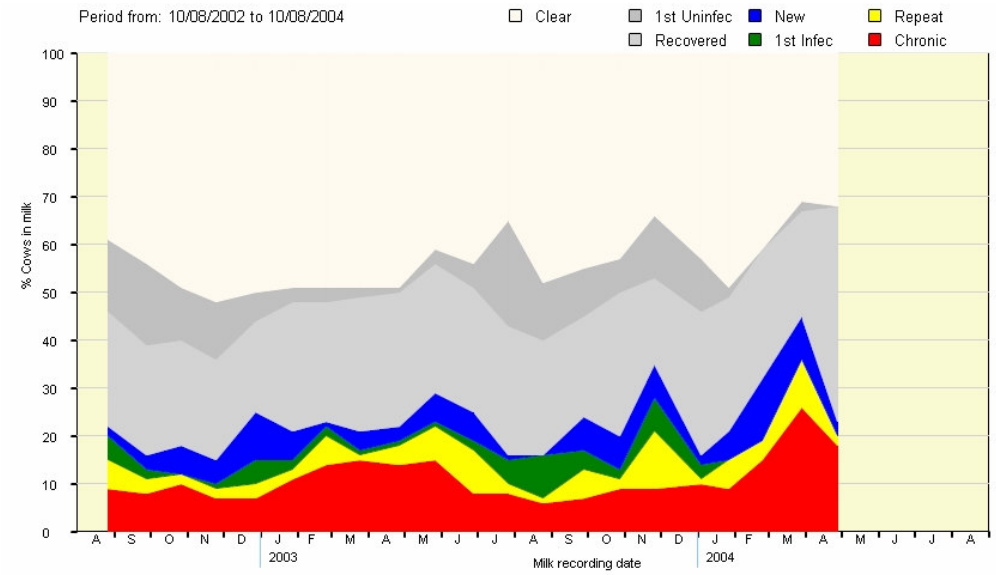

Figure 5: Graphical display of Milk recording SCC status.

Dry period

The SCC values before and after the dry period are displayed in a graph, see figure 6.

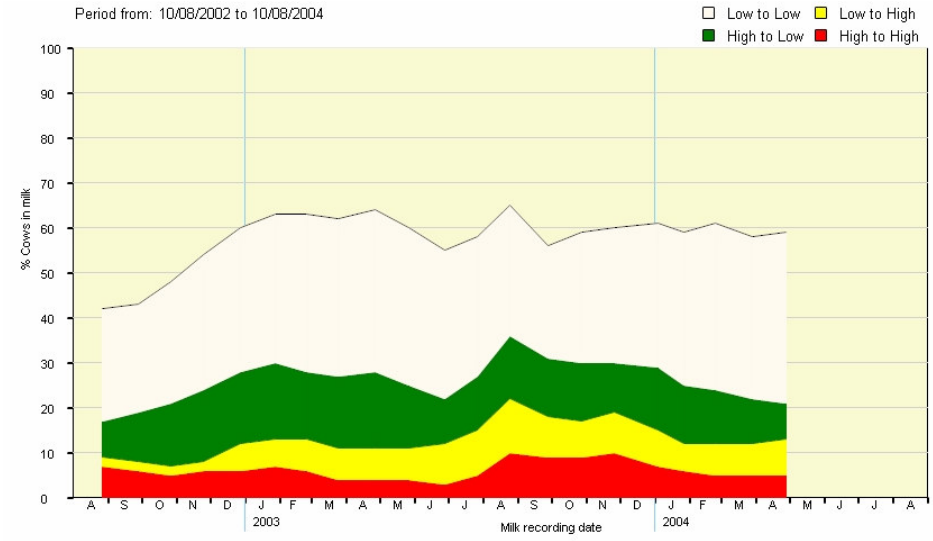

Figure 6: SCC analysis over the dry period

The headings or categories Low to low etc refer to the cell count level before and after the dry period, where low is below the threshold level and high above, in this case set to 200,000 cells/ml.

Low to High indicates those cows that may have been infected during the dry period.

High to High indicates cows that may have been infected throughout the dry period.

High to Low indicates cows that may have cleared any infection during the dry period.

Low to Low indicates cows that appear to have avoided infection during the dry period.

The raw data (percentages of animals) that make up the graphs can be seen in a data table by clicking "View data" alongside the graph. To view the actual individual animals in each category, the user would require an advisor with access to Level 2 (Multi Herd analysis), i.e. through their herd advisor who uses InterHerd.

Table 2: Dry period infection status summary

Date	High to High	Low to High	High to Low	Low to Low
20/04/2004	3 %	5 %	19 %	36 %
16/03/2004	4 %	5 %	21 %	34 %
16/02/2004	2 %	4 %	18 %	30 %
19/01/2004	2 %	4 %	17 %	29 %
15/12/2003	3 %	6 %	17 %	34 %
17/11/2003	4 %	5 %	18 %	31 %
16/10/2003	7 %	3 %	19 %	36 %
18/09/2003	7 %	4 %	18 %	36 %
14/08/2003	8 %	4 %	21 %	30 %
16/07/2003	7 %	4 %	20 %	27 %
17/06/2003	7 %	4 %	18 %	28 %
15/05/2003	6 %	5 %	22 %	29 %
14/04/2003	6 %	5 %	21 %	31 %
18/03/2003	5 %	3 %	23 %	28 %
19/02/2003	5 %	2 %	24 %	25 %
16/01/2003	6 %	2 %	21 %	28 %
12/12/2002	5 %	2 %	21 %	28 %
14/11/2002	3 %	1 %	21 %	31 %
16/10/2002	4 %	4 %	18 %	36 %
16/09/2002	5 %	3 %	21 %	35 %
12/08/2002	5 %	5 %	21 %	29 %

The trend in the table shows improvement in cows going from low to low, although not consistent across all categories. The percentages in the table do not add up to 100%. This is because only cows that calved in the 300 days up to the currently selected recording date are included. They also require at least one milk recording in both the new and previous lactation.

New infections

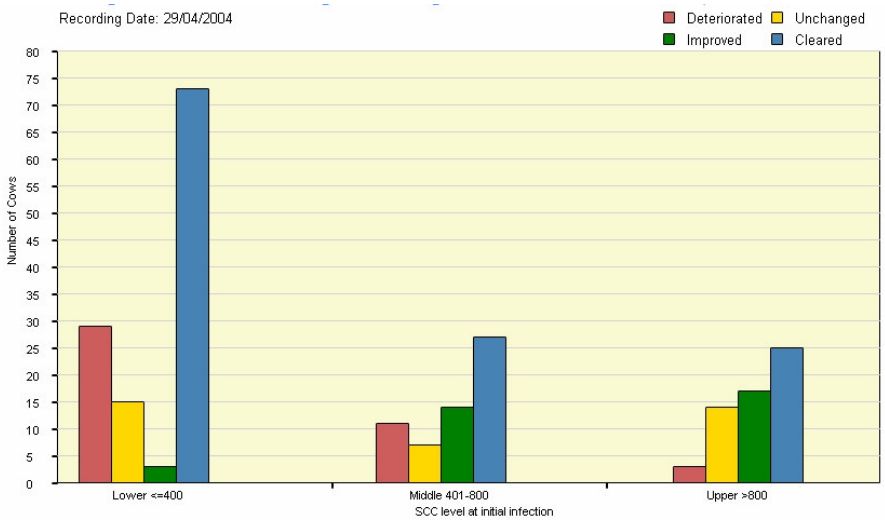

Figure 7: New infection levels

The graph in Figure 7 represents the analysis of the SCC performance in the month following a new infection to establish change in a subsequent SCC. The three sections are the SCC result at the initial infection: Threshold (in this case 200) to 400, 401 to 800 and then over 800. The different colours within those areas then represent the response category (cleared, improved, unchanged or deteriorated).

Level 2: Detailed analysis

Farmers on full InterHerd support or those with advisors that use InterHerd can benefit from a further level of analysis on Herd Companion. Firstly, Vets or consultants with multiple herds can have all their herds registered on the Herd Monitor scheme so that each one can be interrogated using just one log-in. See Appendix two for an example of a list of herds.
Secondly the data displayed for the Health Monitor is more advanced, showing individual cows within the areas that need attention.

All Level 1 reports are available with Level 2.

The first report from Level 2 is the analysis of cows at the last recording date (or any selected recording date) whose cell count is above the threshold level (in this case 200,000/ml). The cows are identified that make up the categories: New, first, repeat and chronic.

Table 3: SCC analysis per cow over threshold

Recording Date: 29/04/2004

New: Total= 3

Cow	SCC	Previous SCC	Parity	Days post partum	>200,000 This lactation	>200,000 Previous lactation
63	**479**	80	3	180	1 / 6	1 / 12
380	**332**	112	2	331	1 / 12	0 / 9
103	**214**	144	2	285	1 / 10	2 / 12

First: Total= 1

Cow	SCC	Previous SCC	Parity	Days post partum	>200,000 This lactation	>200,000 Previous lactation
158	**487**	--	2	20	1 / 1	4 / 13

Repeat: Total= 7

Cow	SCC	Previous SCC	Parity	Days post partum	>200,000 This lactation	>200,000 Previous lactation
1203	**1349**	101	1	85	2 / 3	--
36	**365**	128	7	195	2 / 7	2 / 13
188	**359**	143	3	277	5 / 9	1 / 10
176	**298**	119	3	267	2 / 8	1 / 10
187	**265**	139	3	316	2 / 10	4 / 11

Chronic: Total= 7

Cow	SCC	Previous SCC	Parity	Days post partum	>200,000 This lactation	>200,000 Previous lactation
116	**1395**	4670	4	141	4 / 4	0 / 9
26	**910**	639	5	183	6 / 6	3 / 9
56	**790**	996	2	224	3 / 7	1 / 15
43	**390**	811	4	422	8 / 14	0 / 11
147	**335**	302	4	243	6 / 8	0 / 11
63	**320**	411	7	287	5 / 9	2 / 11
6	**232**	289	4	382	2 / 13	3 / 14

SCC Summary

Further to the SCC summary in level one, (see table 1) these tables of data display the lactation number or parity of those cows in each category of health, as well as the dry period performance stats and assessment of continued infections.

Table 4: SCC summary report

Recording Date: 20/04/2004

SCC status summary on 20/04/2004

Parity	**Total cows**	New	First infected	Repeat	Chronic	**Total infected**	% infected	Recovered	First uninfected	Uninfected	**Total uninfected**
	7	0	0	0	1	**1**	14%	1	0	5	**6**
1	**32**	0	0	1	0	**1**	3%	4	2	25	**29**
2	**32**	2	1	0	1	**4**	13%	3	2	23	**26**
3+	**57**	7	0	6	6	**19**	33%	7	4	27	**34**
Total	**128**	9	1	7	8	**25**	20%	15	8	80	**95**

Dry period performance for cows calving in the 300 days before 20/04/2004

A. Dry period summary

Status	Total	**% Total**
Low to High	6	**8%**
Both High	4	**5%**
High to Low	46	**57%**
Both Low	24	**30%**

B. Dry period performance of cows ending last lactation with **LOW SCC status**

Parity	Total	Start LOW	**% Start LOW**	Start HIGH	**% Start HIGH**
	0	0	**0%**	0	**0%**
1	0	0	**0%**	0	**0%**
2	27	21	**78%**	6	**22%**
3	24	16	**67%**	8	**33%**
4	8	6	**75%**	2	**25%**
5+	11	3	**27%**	8	**73%**
Total	70	46	**66%**	24	**34%**

C. Dry period performance of cows ending last lactation with **HIGH SCC status**

Parity	Total	Start LOW	**%Start LOW**	Start HIGH	**% Start HIGH**
	0	0	**0%**	0	**0%**
1	0	0	**0%**	0	**0%**
2	2	1	**50%**	1	**50%**
3	0	0	**0%**	0	**0%**
4	1	1	**100%**	0	**0%**
5+	7	4	**57%**	3	**43%**
Total	10	6	**60%**	4	**40%**

SCC at the milk recording following the first infection in the current lactation of all cows present on 20/04/2004

New infection level	Total	%	Cleared	%	Improved	%	Unchanged	%	Deteriorated	%
Lower <=400	91	61%	40	44%	2	2%	20	22%	16	18%
Middle 401-800	25	17%	11	44%	7	28%	2	8%	2	8%
Upper >800	33	22%	13	39%	8	24%	5	15%	2	6%
Total	149	100%	64	43%	17	11%	27	18%	20	13%

From here the advisor can investigate problem cows using the InterHerd software.

Dry period

The Dry period analysis in level 2 lists each animal recorded in milk at the selected recording date in their relevant category (Low to Low etc).

Table 5: Dry period SCC analysis

Recording Date: 20/04/2004 Cows calving within 300 days Change

Low to High: Total= 6

Cow	Last calved	Parity	1st SCC in this lactation	2nd SCC in this lactation	Last SCC in previous lactation	2nd last SCC in previous lactation	Number SCC>200 previous lactation
153	10/02/2004	6	**1333**	200	**153**	224	2 / 7
116	01/12/2003	4	**967**	867	**40**	22	0 / 9
112	19/11/2003	5	**3574**	21	**58**	83	0 / 10
1001	13/11/2003	6	**539**	92	**111**	141	2 / 11
26	20/10/2003	5	**271**	984	**117**	182	3 / 9
580	16/09/2003	2	**363**	70	**40**	28	0 / 10

High to High: Total= 4

Cow	Last calved	Parity	1st SCC in this lactation	2nd SCC in this lactation	Last SCC in previous lactation	2nd last SCC in previous lactation	Number SCC>200 previous lactation
158	31/03/2004	2	**487**	--	**326**	141	4 / 13
55	03/03/2004	5	**917**	94	**494**	314	7 / 10
46	31/10/2003	8	**308**	123	**455**	268	2 / 12
37	29/07/2003	7	**602**	105	**391**	371	10 / 13

High to Low: Total= 26

Cow	Last calved	Parity	1st SCC in this lactation	2nd SCC in this lactation	Last SCC in previous lactation	2nd last SCC in previous lactation	Number SCC>200 previous lactation
136	24/01/2004	2	**21**	44	**410**	506	6 / 10
137	17/01/2004	2	**15**	32	**423**	46	3 / 9
42	06/01/2004	4	**14**	40	**525**	245	4 / 14
204	13/12/2003	3	**47**	26	**227**	89	1 / 11
109	11/12/2003	2	**51**	45	**480**	108	1 / 11
201	10/12/2003	3	**23**	12	**619**	219	4 / 13
113	08/12/2003	2	**72**	9	**204**	96	1 / 9

Low to Low: Total= 43

Cow	Last calved	Parity	1st SCC in this lactation	2nd SCC in this lactation	Last SCC in previous lactation	2nd last SCC in previous lactation	Number SCC>200 previous lactation
11	22/01/2004	3	**9**	23	**87**	89	0 / 11
168	12/01/2004	2	**33**	48	**50**	165	1 / 12
72	06/01/2004	2	**19**	16	**30**	37	0 / 15
214	11/12/2003	2	**13**	19	**123**	25	0 / 13
25	10/12/2003	2	**41**	10	**23**	32	1 / 13

New Infections

This report highlights the cows that had a new infection (SCC above the threshold for the first time in the current lactation) on a selected milk recording date or dates.

The cows are listed in descending order of the SCC value, along with relevant details relating to SCCs in the current and previous lactation.

The SCC and Response at next recording refer to the SCC level at the subsequent milk recording. Consequently these variables are unavailable if the grid refers to the latest available milk recording. Unchanged means the SCC is still at a high level, Clear means the SCC has gone down below the threshold.

Table 6: New infection rate

Number of recording dates 2 Change

Recording date 16/02/2004 Total: 5

Cow	Parity	Days post partum	SCC	Previous SCC	Infection Level	SCC at next recording	Response at next recording	>200 in previous lactation	Avg last 2 SCCs in previous lactation
56	2	160	**1223**	55	Upper >800	996	**Unchanged**	1 / 15	212
1203	1	21	**775**	--	Middle 401-800	101	**Clear**	--	--
152	5	348	**644**	178	Middle 401-800	--	--	5 / 12	204
34	2	180	**256**	42	Lower <=400	89	**Clear**	0 / 11	61
65	1	111	**230**	110	Lower <=400	--	--	--	--

Recording date 19/01/2004 Total: 5

Cow	Parity	Days post partum	SCC	Previous SCC	Infection Level	SCC at next recording	Response at next recording	>200 in previous lactation	Avg last 2 SCCs in previous lactation
116	4	49	**967**	--	Upper >800	867	**Unchanged**	0 / 9	31
182	2	454	**584**	97	Middle 401-800	--	--	0 / 13	158
202	2	296	**298**	99	Lower <=400	--	--	0 / 10	138
169	4	61	**225**	134	Lower <=400	144	**Clear**	0 / 11	123
193	3	196	**202**	157	Lower <=400	165	**Clear**	1 / 10	254

Appendix one: Methods for modifying your Milk Protein

These methods are drawn from the Livestock Knowledge Transfer DEFRA initiative operated by ADAS/IGER/University of Bristol

- The precursors for milk protein production are dietary and/or body proteins
- Cows in positive energy balance tend to produce milk with higher protein %
- Diets high in starch tend to produce a higher protein level
- Diets higher in fibre and fat can lower protein %
- Dietary protein which bypasses the rumen and is digested in the lower gut can increase milk protein %

Protein will increase Protein will decrease	**Effect on milk protein %**
FORAGE CHANGES TO MODIFY MILK PROTEIN %	
• Maximise intakes during early lactation and keep intakes high. Making high-quality forages and offering them in an unrestricted manner is of particular importance in maintaining good milk protein % in high-forage systems. Reduced forage intake due to poor silage fermentation, stale silage or restrictions on access through lack of trough or self-feed space can depress milk protein %.	
• Use mixed forages. Forage mixtures, including for example maize silage, whole-crop silages or fodder beet, will generally lead to increased milk protein %. Maize silage provides starch and energy but is best used in forage mixtures that promote high overall forage intakes and so higher milk protein %.	
• Feed legumes or legume silages. There is some evidence of lower protein % when legumes or legume silages are a high proportion of forage intake.	
• Feed more fresh grass. There is a significant increase in milk protein when cows are turned out to grass in the spring. Silage has less of an impact on increasing protein that fresh grass.	

CONCENTRATE CHANGES TO MODIFY MILK PROTEIN %	
• Increase concentrate feeding level. As the level of concentrate feeding increase milk protein % increases, quickly at first, before levelling off. This effect builds up over time, so that milk protein % can become very low if low levels of concentrates are fed for long periods of time.	
• Feed bypass starch. Rumen bypass starch, notably from maize grain and unheated maize co-products, can increase milk protein %.	
• Increase dietary protein supply Increasing crude protein will only increase milk protein % if protein is deficient in the diet. Feeding rumen bypass protein (e.g. rumen protected protein blends) can also increase milk protein %.	
• Feed dietary fat. Above a certain level, most fat supplements (protected, saturated and unsaturated) will depress milk protein % regardless of fat source.	
• Feed more often. Strategies that provide an even supply of fermentable carbohydrates (i.e. starch and sugars) over the day, such as Total Mixed Rations or out-of-parlour feeding (from a bag or a feeder), will increase milk protein %.	
DRY COW FEEDING TO MODIFY MILK PROTEIN %	
• Control condition score. Cows that are too fat at calving (over body condition score 3.5) will have reduced forage intakes and lower milk protein %.	
• Feed extra bypass protein. Supplementary protein in the dry period can in some situations lead to an increase in milk protein %.	

Appendix 2: Menu option for Level 2 using multiple herds

Select a premises

Premises	Name	Latest recording	SCC threshold	Low: Upper Limit	Medium: Upper Limit
012345601	John Smith Farms	12/08/2004	200	400	800
086543201	B Bartlett and son	10/08/2004	200	400	800
095642201	Blackcroft Farm	31/07/2004	200	400	800
119994503	Mr Brown	06/08/2004	200	400	800
102554307	L.L Jones and partners	01/08/2004	200	400	800