Improving the management of the dairy cow through use of the Herd Companion on line website

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Abstract

NMR has pr ovided an on li ne appl ication for use by customers si nce 2005 c alled Herd Compani on- an information management system for customers benefi ting fro m NMR (Nati onal Mil k Re cords) and NML (National M ilk Laboratori es) servi ces. It all ows far mers and th eir advi sors to vi ew fert ility, heal th, milk quality and disease i nformation on line i mmediately after the herd re cords have be en process ed and updated.

The policy of NMR i s to encourage the use of the data within the website by not only the farmer but al so the vet and farm advisors. Information such as s omatic cell counts, results of disease tests such as BVD, Leptosirosis, I BR, J ohnes, r esults o f b ulk a nd in dividual cow masti tis pathogen te sts, (usi ng PCR technology) and bacto breakdown analysis are all available on the website.

The Herd Co mpanion system al lows c ustomers to vi ew key parameters w hich show tr ends and ca n highlight where performance of the dai ry herd i s not meeting expectations. Example are as such as cow health (somatic cell counts % over 20 0, herd aver ages), feed monitor (using proteins t o look at en ergy levels in the cow diet) and key performance indicators (of which there are approximately 15, such as milk per cow per year which highlights the importance of fertility management), all help the customer manage their herds and, importantly for NMR, makes the farmer reliant upon his records.

1.0 Introduction slide 1

I woul d like to present   a bri ef talk on the Herd compani on website offered by NMR   (National M ilk Records)

NMR is the largest milk recording organisation in GB with approx 5,000 regular milk recording customers. Average herd size 150 cows. Approx 11,000 dairy producers in GB.

NMR grou p also own Na tional Mil k L aboratories (NML) who c onduct paym ent testi ng s ervices for circa 95% of GB dairy farms in addition to offering disease and mastitis pathogen testing.

1.1 Introduction NMR locations, slide 2

NMR owns 3 milk testing laboratories.

One in Harrogate that tests the Dairy Herd Improvement samples and two payment testing labs under the NML banner at Glasgow and Wolverhampton

The red pins in the map indicate the milk haulier transport sample collection points which out vans collect from daily, delivering payment samples to the labs in Glasgow and Wolverhampton.

1.2 Introduction NMR website, slide 3

This is a view of the NMR website

1.3 Introduction NMR website Herd companion location, slide 4

Herd Companion can be accessed through the NMR website by clicking on the Herd Companion button at the top right of the screen

2.0 Herd Companion main menu, slide 5

Once logged in the user h as access to a number of areas to hel p him manage his cows. Areas such a s health, fertility, mil k quality and di sease information are al l available, using data that has already been recorded either from milk recording, his milk payment sample or samples sent in for testing.
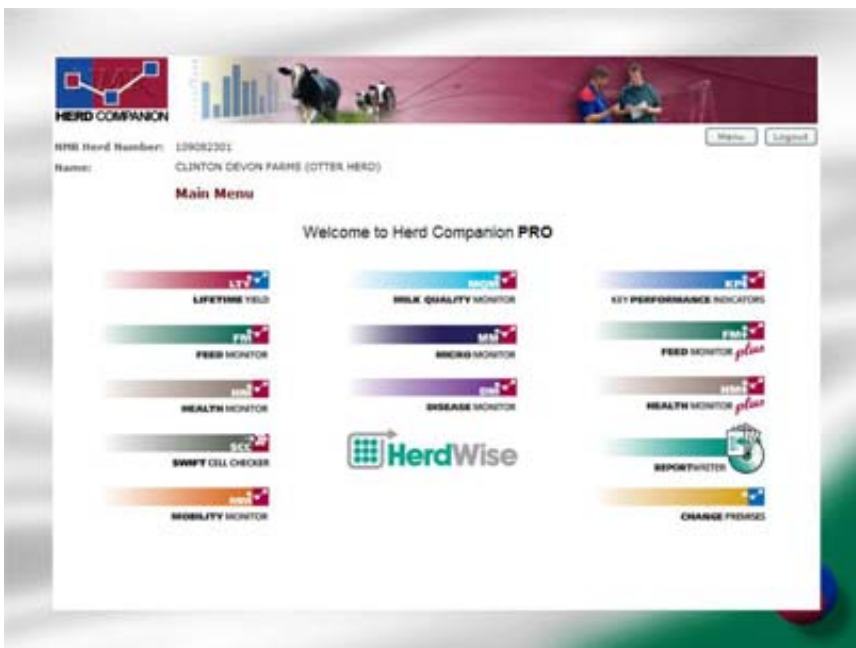
2.1 Accessing the system, slide 6

Access is free and users of on farm software can gain free access to further interrogate the data using the Herd Companion Pro functionality

Farm advisors such as vets, consultants or nutritionists can access the data for any of t heir farms, as long as the farmer gives permission.

2.2 Milk quality monitor, slide 7

Dairy fa rmers h aving t heir b ulk s amples t ested by N ML fo r p ayment p urposes (95% o f a ll G B d airy farmers) can use Herd companion to access their payment results on line.

They do not need to be milk recording with NMR, it is free and they can al so access their disease and micro test results.


2.3 Groups of customers, slide 8

A benefit of a vet, consultant or feed advisor having access to f arm records as a third party is that they can set up their own comparison tables to look at the performance of their herds. Indeed one of the main drivers for us to set up the Herd Compani on website was to encourage the use of the farm advi sors- not only helping their customers to i mprove effi ciency using data that has al ready been rec orded, but t he more we can encourage use of the records, the less likely the customer is to leave milk recording.
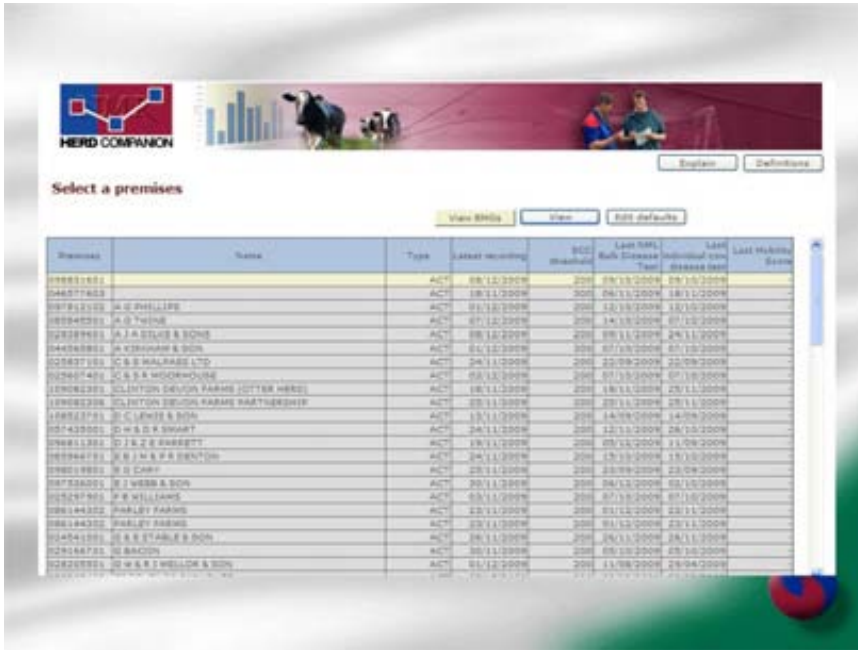
3.0 Cell count summary, slide 9

I am going to talk you through a small number of the available reports and functionality to give you a flavour of what sort of information is available.

The cell count summary report lists results for each animal tested, with the animal with the highest cell count at the latest recording at the top of the list. With the latest 4 milk recording results also showing.

One of the most popular figures is the % contribution to the herd, for example here cow line number 2875 produced 13% of the bulk somatic cells at the last recording.

3.1 Cell count types, slide 10

Within Herd companion we try to distinguish between 4 types of infection:

Cows with a first infection over a set cell count limit within the current lactation (new)

Cows with a mastitis infection at their first recording of a lactation only (first)

Cows with a cell count over the threshold on more than one occasion in the current lactation (repeat)

And cows with a high cell count at the current and previous recording (chronic)
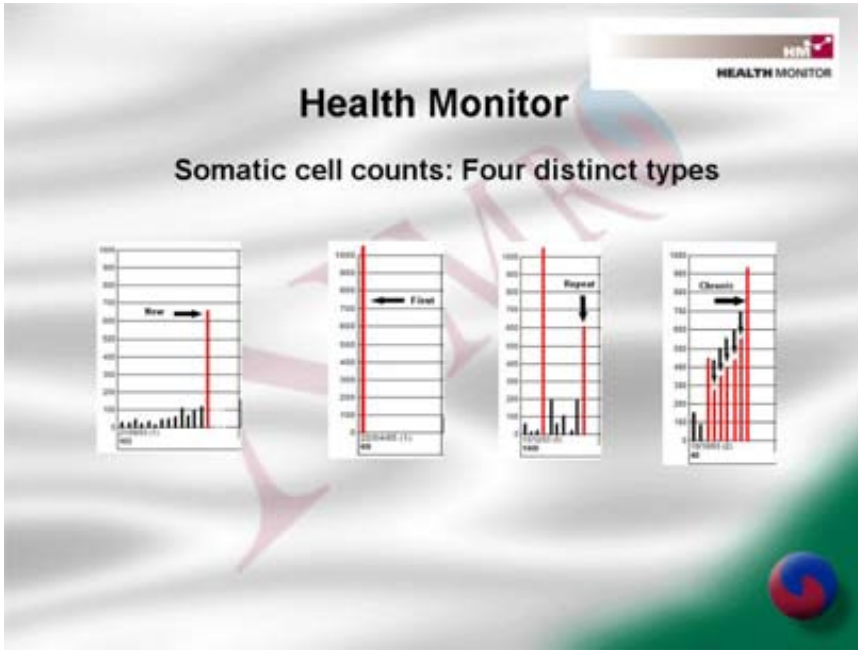
## 3.2 SCC status, slide 11

So- the red section is the chronic cows.

This graph on a live herd shows that roughly 15% of his herd have a chronic mastitic infection and that the trend, if anything over the last 15 months shows chronic infections to be increasing.

In addition- if we look at dry period performance for the same period…..
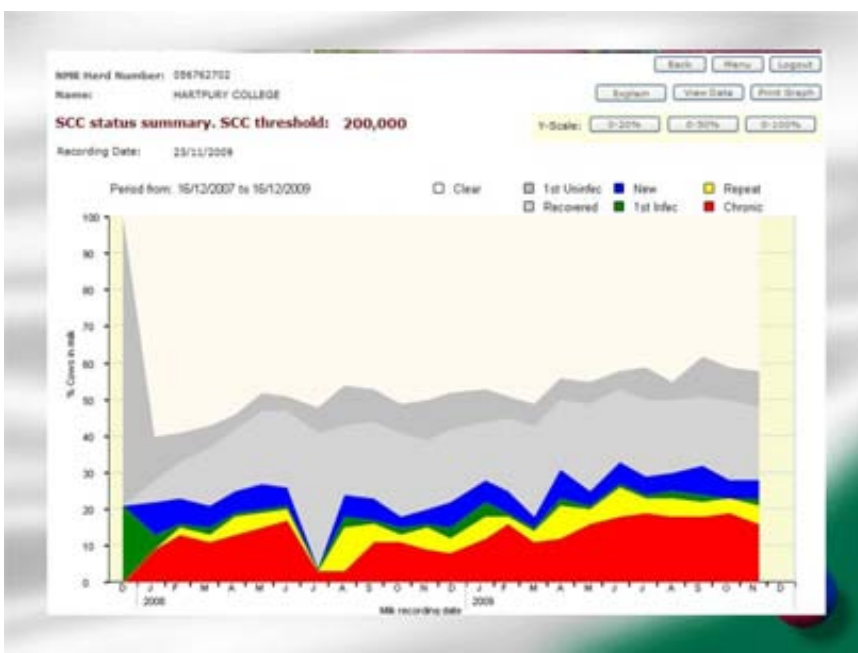
3.3 SCC dry period performance, slide 12

Here we are looking at somatic cell counts before and after a cows dry period.
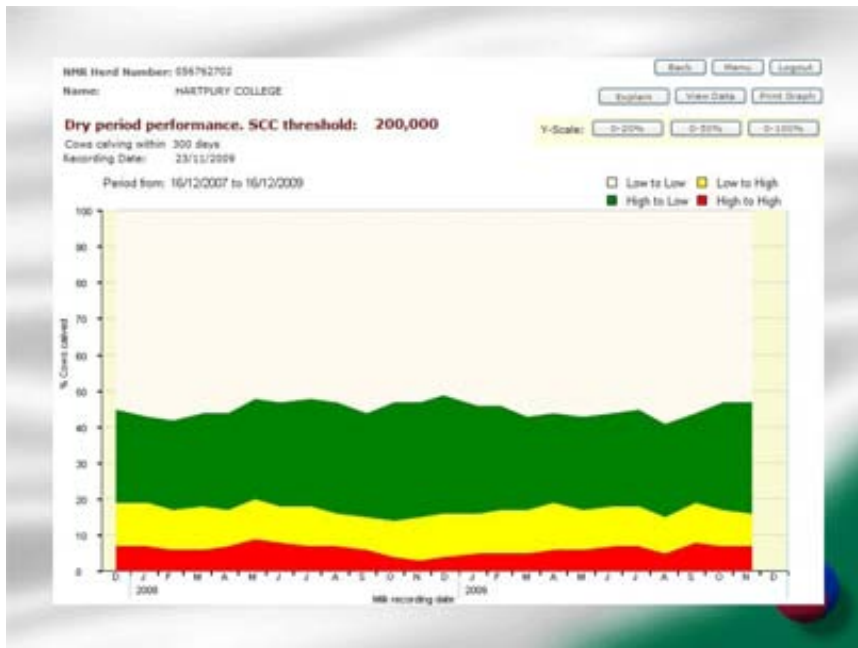

This graph displays trends in the four categories of dry period performance over time and the key at the top indicates the cows which fall into one of the four categories. For example, the cows in the red section ended one lactation and started the next with a high cell count.

The data are limited to cows that calved in the 300 days up to the currently selected recording date and require at least one milk recording in both the new and previous lactation.

On this farm, there is no real deterioration of the cows getting new infections but equally there is no reduction in the cows finishing one lactation with a cell count above the threshold and starting a new one stil with a high cell count. He may be well advised to test some of the cows in the red high to high section using the PCR mastitis pathogen testing on offer to try and identify if there is a particular infection affecting the herd.

4.0 Feed monitor ,slide 13

The bars on the chart represent the average kg milk production of all cows milked on the corresponding recording date. The points show a reference value referred to as the "Protein 3.2% intercept". This is derived from plotting yield against protein for all individual cows milked on the recording date. A best-fit straight line through these gives an intercept at a reference value of 3.2%. This intercept broadly represents the average daily yield at that month above which the protein % of the milk drops below 3.2%. If significant numbers of cows are yielding greater than the intercept level, this may indicate energy deficiency in the cows.
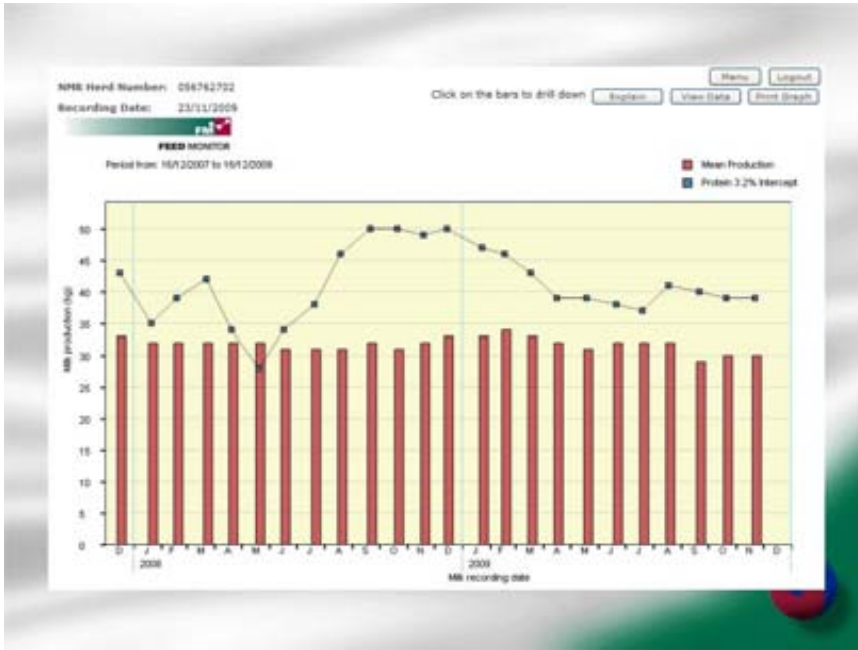
The knock on effect from energy deficiency may well be ketosis which is linked to poor fertility, and I will explain why it is important later.

4.1 Protein vs production slide 14

Each point on thi s chart repres ents t he protei n % agai nst milk yi eld for a cow mil ked on the recor ding date. The col ours and shape of the i ndividual points describe t he ferti lity status and sta ge of l actation respectively of the cow.
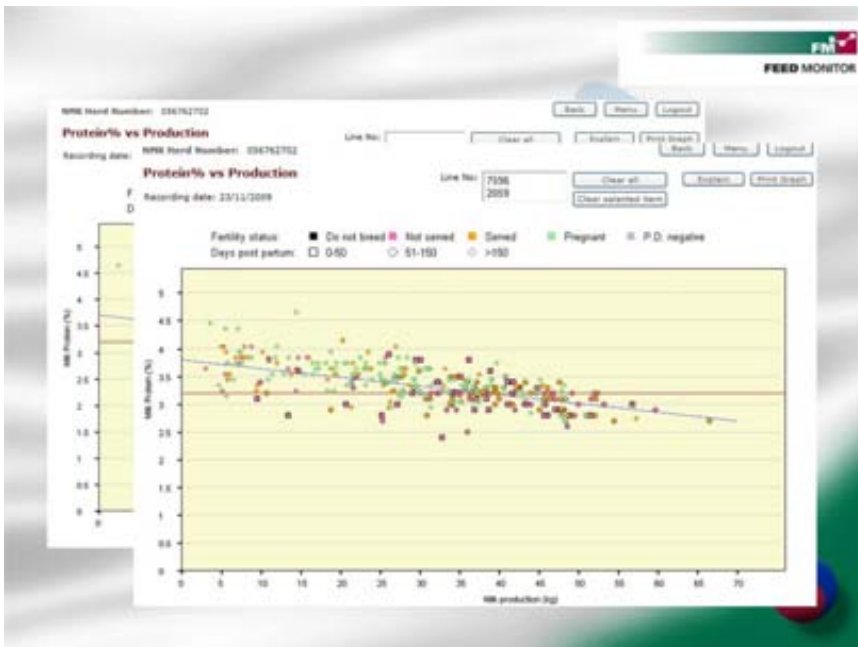
The bl ue li ne i s a strai ght li ne f itted by li near re gression through al l the poi nts to s how the overall relationship between milk quantity and protein %. The red line highlights the 3.2% protein level.

As yield increases the protein % normally declines. In cows with severe energy problems this decline is accentuated. Where the blue "best-fit" line crosses the red 3.2% protein line gives the yield value for the "Protein 3 .2% in tercept". I t in dicates t he le vel o f mi lk p roduction (in kg mi lk p er c ow) t hat c an be sustained by the diet, whilst maintaining 3.2% protein in the milk.

In thi s case, the i ntercept i s at aroun d 25l so th e farmer i s o n average g etting 25 l p er cow on the present di et without protei n dropping bel ow the 3 .2% level. H owever, it is c lear t hat a n umber of t he cows in negative balance are in the 0-50 days pos t partum- exactl y the cows he shoul d be tryi ng to get back in calf. It is this graph that feed advisors find particularly useful.

In the next slide you can see that milk yield has risen to 35l with fewer cows below the 3.2% level- knock on benefits of better fertility.

4.2 Average protein % , slide 15

Just to illustrate the point, the graph here is from a live herd averaging 8,500 kg in 305 days.
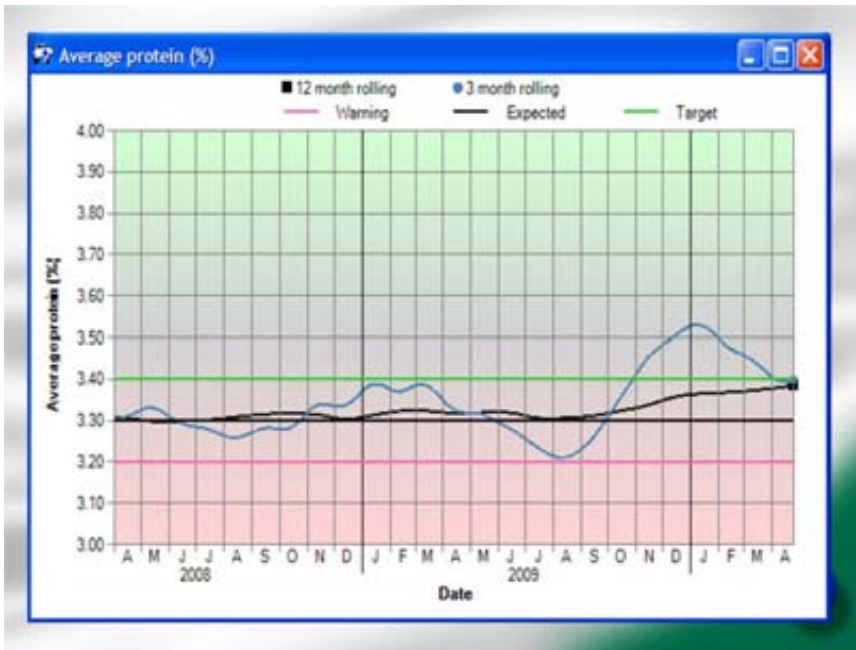
The blue line is a rolling 3 month protein percentage and just at the ti me when the protein takes a di p in the autumn of last year,…….

4.3 Conception rate, slide 16

There is a corresponding dip in the conception rate and…….
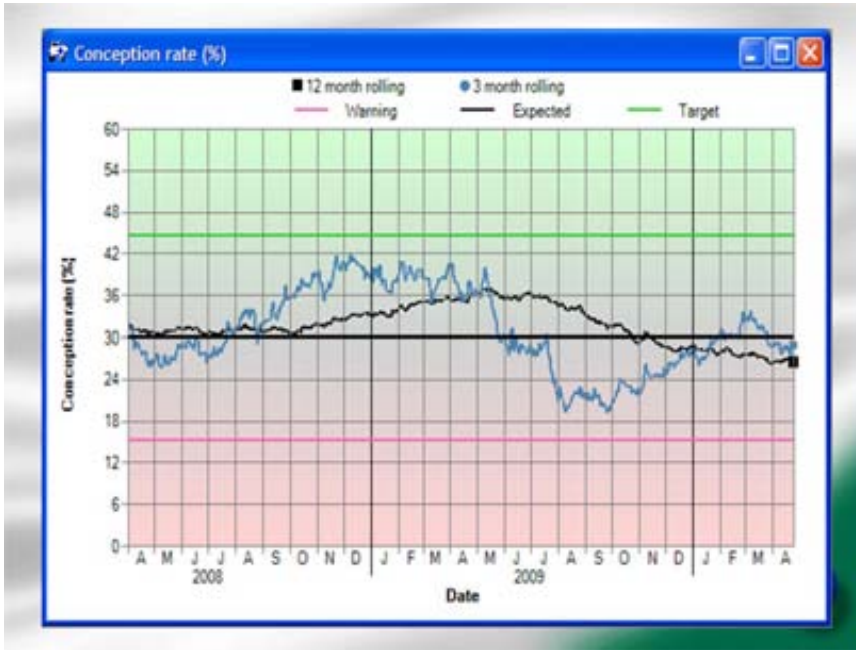
4.4 Calving- conception, slide 17

A rise in the calving to conception interval.
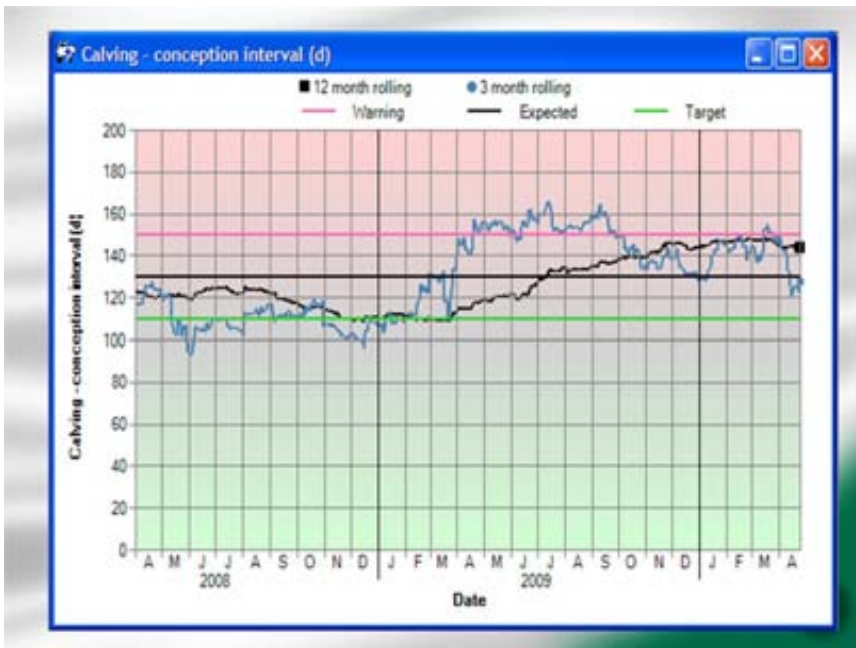
This drop in protein levels indicating a shortfall in the energy requirement in the diet of high yielding herds, with knock on effects to the fertility performance is becoming more common

5.0 Herdwise, slide 18

Herdwise is a service we offer to our milk recording customers where we send their samples for Johnes disease testing following every third monthly milk recording. We are testing about 22,000 samples per month currently and obviously, the more we can do with the samples we already have, the better. We introduced mastitis pathogen testing on bulk samples earlier this year and are due to introduce individual cow PCR testing using the NMR samples we already have, later this year.

Results are available via Herd Companion allowing the farmer quick access to the latest results.

5.1 Herdwise report , slide 19

The results are grouped into bands, easily identified with a colour, based on their antibody profile.

Green colours indicate they are non infected and non infectious and yellow colours indicate the cow is controlling the infection but may be in the initial phase of not controlling the infection.

5.2 Herdwise report , slide 20

Red cows are no longer controlling the infection.

The very fact that advisors such as vets can view the farm data means that they can see the results and advise the farmer accordingly.

6.0 KPIs, slide 21

Key Performance Indicators are rolling 12 month averages (which remove any seasonal effects) which allow a farmer to see how his farm is performing compared to other similar sized farms.
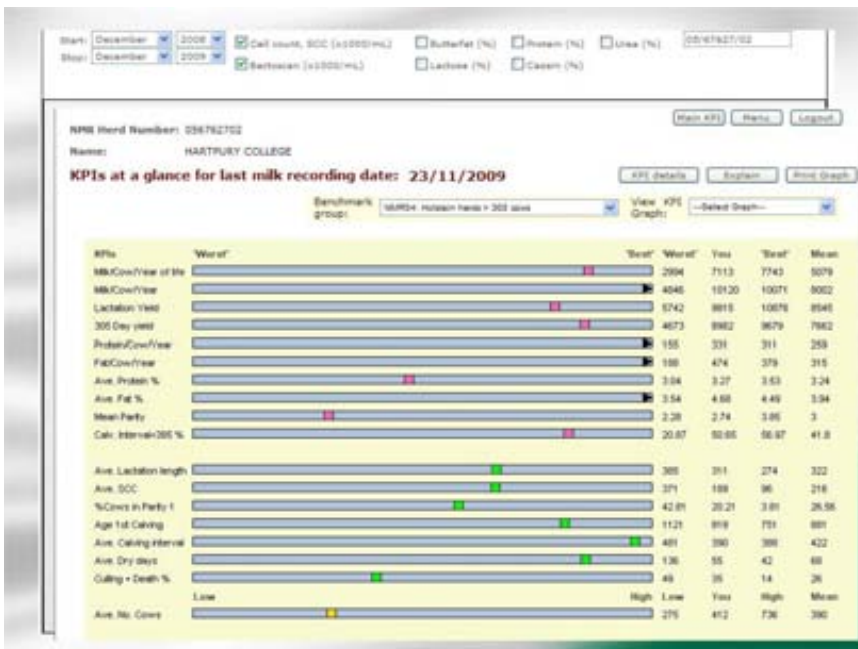

It also allows farm advisors to compare farms, for example a vet practice could look at performance of the herds at their vets practice, subdividing their customers to groups such as herd size, organic, channel Island breeds etc.

6.1 SCC KPI, Slide 22

Farmers can plot their performance on many differing parameters and compare their performance to 50 similar sized other random herds held within the NMR database . The farm performance is indicated in yellow and is plotted against the oth er farms so that the farmer can see easi ly how he is performing against other similar farms.
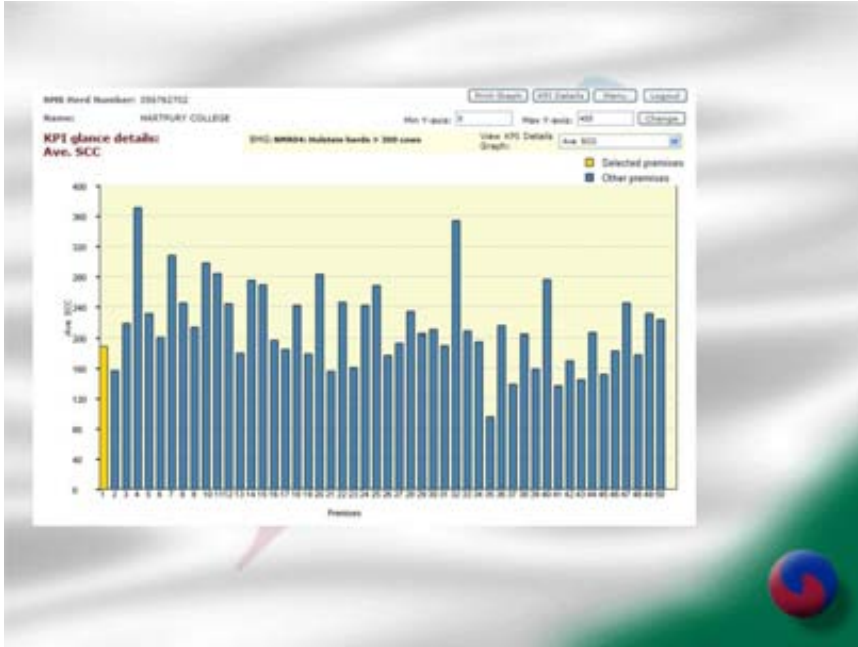
Here for exampl e the herd average s omatic cell count was just under 200 compared to a range between 370 and 90 for 50 other farmers with a similar sized herd picked at random

6.2 All KPIs , slide 23

Here is a selection of some of the parameters that can be used as Key Performance Indicators.

7.0 Lifetime Yield, slide 24

Finally I would like to show you a section about lifetime yield per cow-

This is the true commercial contribution of cows to the total herd performance in terms of milk produced during the cows life.

Here the farmer can see the differences in milk produced by cows in differing lactations over the last 2 years, and also the number of cows in each lactation group- let me explain why this is important

7.1 Lifetime daily yield, slide 25

This slide is a little involved but the 3 sections indicate months along the bottom, and the lactation curves we all understand and how the reproductive cycle works in the middle.
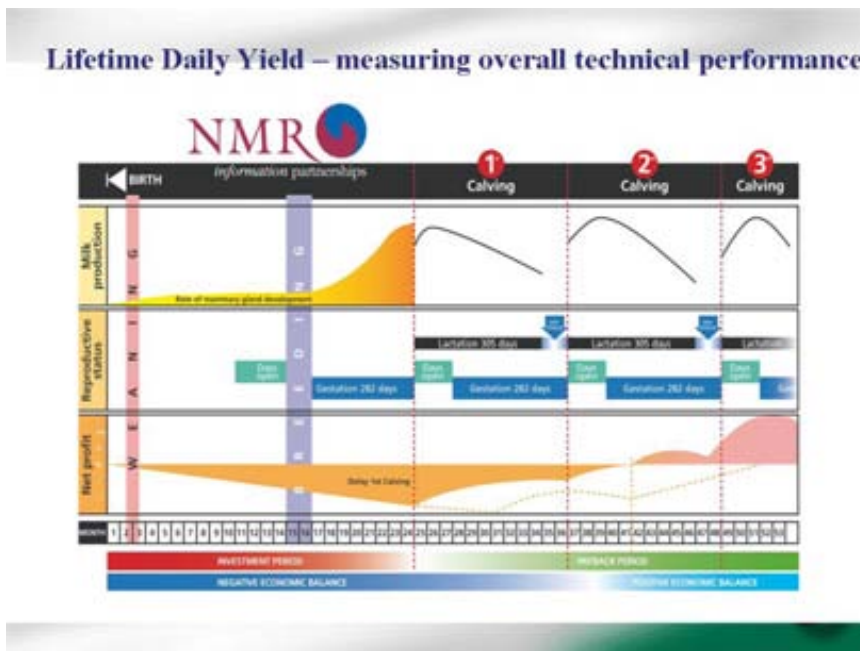

It is the bottom section that is the interesting bit, plotting the net profit of an animal from birth. You can see that as soon as the animal is born, it starts to cost the farmer money, feeding it, housing it and looking after it. He then has to pay for semen and wait until she calves before she starts contributing to

income. However, it is a gradual process for her production to pay for not only her continued upkeep but also the money the farmer has invested in her since birth, and if she is in calf by the time she is 15 or 16 moths old it will take until well into her 2nd lactation before she is contributing to the farm profitability. Up until this point, the animal has been a drain on profit.

The effect of not getting her in calf until 21 months, with her calving down at 30 months means that she will be well into her 3rd lactation before she contributes to profit.

7.2 Average NMR lactations before leaving the herd, slide 26

In NMR, this is the average lactation number animals reach before leaving the herd- currently averaging almost 2.5 lactations. The graph shows the trend (if any) over the last 10 years.
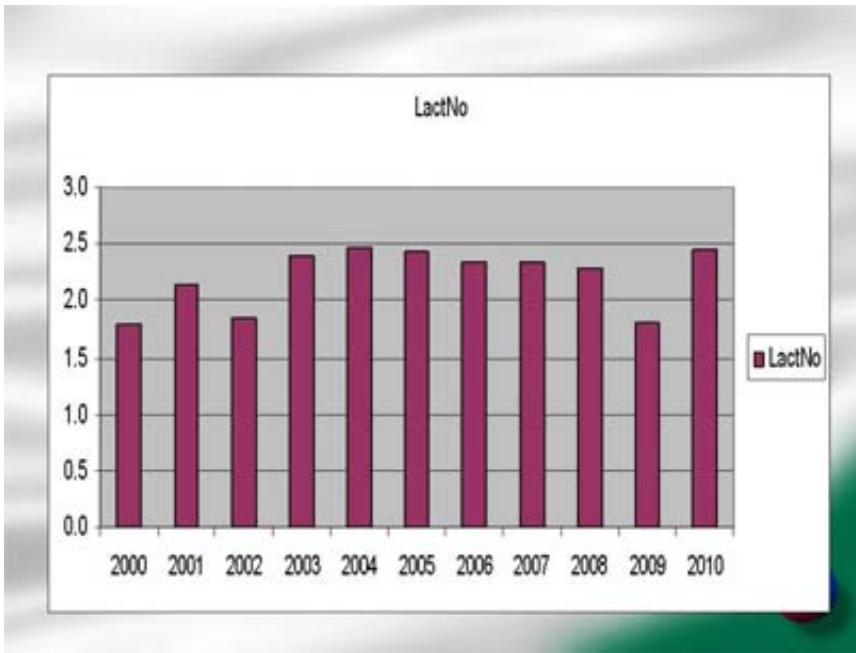

It will be interesting to see if this figure rises now that we have started to point out the financial benefits of keeping fit, fertile and healthy cows for longer.

For information, the average age at leaving the herd in 2010 was 4 years 8 months.

7.3 Average age at 1st calving, slide 27

We are starting to see a trend in the average age of heifers at first calving coming down so it will be interesting to see if this continues.
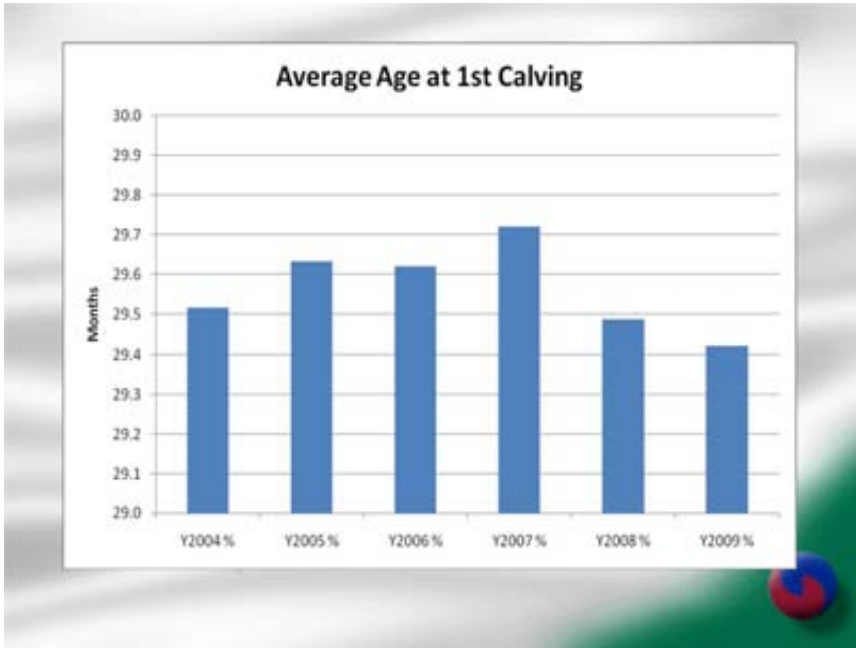
7.4 True performers, slide 28

So- with the information available it is easy to see that whereas the traditional thinking of increasing yields was the way to increase profitability, it is becoming clear that a longer lasting well managed cow that does not suffer from poor fertility as a result of an energy deficient diet adds more to farm profit.
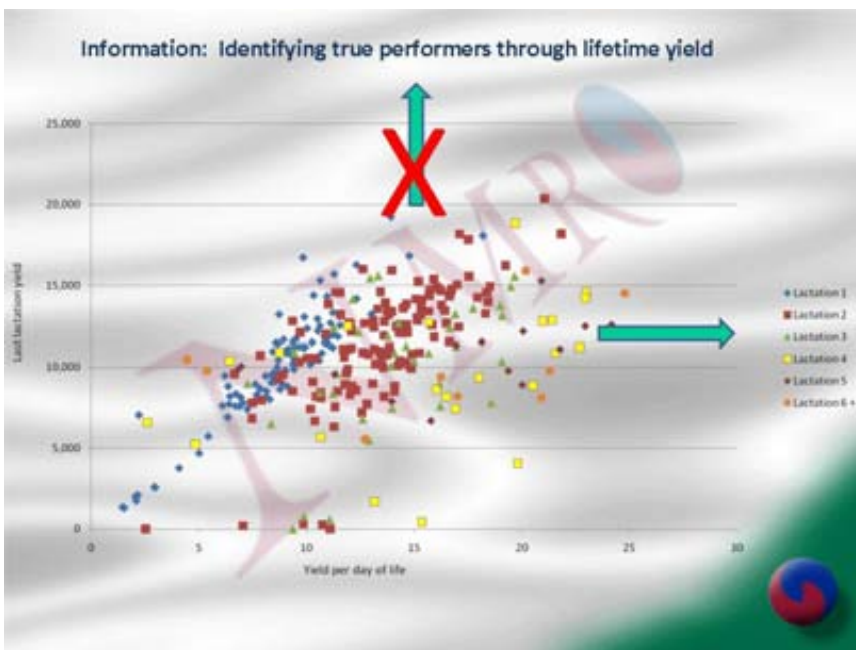
There appears certainly to be the case for, dare I say it some cross bree ding bringing hybrid vigour to milk producing cows, leading to a longer productive period, thus making a greater contribution to farm profits

8.0 Conclusion, slide 29

In conclusion, in NMR we want to encourage the use of the Herd Companion system by farmers and their advisors in order to help them make the right management decisions.