

Take the mystery out of rising cell counts with DNA detection service

Bugs nipped in the bud

Vets and producers are reaping the benefits of quick and clear identification of bacteria that cause increased cell counts. Vets can treat problems more effectively and the producer has a fighting chance of avoiding milk price penalties. One Somerset unit shows just how straight forward this can now be, thanks to the latest bacteria 'detective' service, PCR (polymerase chain reaction).

text **Karen Wright**

Chris Dally, herd manager at Green Farm Dairy, Downhead in Somerset, picked up on rising somatic cell counts

in the weekly bulk milk tests towards the end of last winter. The herd of 270 Holsteins normally averaged cell counts



Chris Dally: PCR gave us results in days

of around 160,000cells/ml, which was a level that Chris was happy with. But by March 2010 levels had crept up to 280,000cells/ml.

"We were in grave danger of incurring milk price penalties," says Chris. "We were looking at dropping a penny or more off our milk price. Levels can creep up and you make excuses, but when it starts to affect profitability you have to take action."

The herd averages around 8,000 litres on a fairly traditional system – set stocked during the summer and a complete diet in winter with buffer feeding year round. "We don't push the cows really hard,"

PCR's role in mastitis control

Somerset vet and well-known mastitis specialist Peter Edmondson comments on the value of PCR tests for better identification of mastitis-causing bacteria.

Accurate bacteriology testing is very important in successful decision making in high cell count herds. And here's why. Many years ago one of our clients phoned for help with a cell count problem in his herd. A visit was arranged, but he cancelled the visit as he had solved the problem by culling nine high-cell-count pedigree cows.

A few months later he phoned again asking for help. This time we did get involved and through bacteriology tests we identified *Strep agalactiae* as the problem. The good news was that these cows could be easily treated with intramammary antibiotics resulting in almost a 100% cure rate. The downside was that the nine cows that he had culled almost certainly had the same bug and could have been treated.

Many producers have held back from using conventional bacteriology tests

because there have always been concerns about reliability. Samples had to remain cold from collection to the lab, which meant using a more costly guaranteed delivery. Then the test – that involves growing a culture – could take up to five days in the lab.

PCR testing has overcome many problems. Samples are fixed at collection with the preservative table in the pots and can be sent by conventional post. The preservative keeps the sample sterile and it does not matter if it gets warm.

PCR technology tests for DNA and so the result is very specific and accurate and takes out all human interpretation. But the test does have its limitations. It does not test for all mastitis bacteria. For example, PCR testing will not pick up *Pseudomonas* infections, which can cause clinical mastitis and are associated with contaminated water supplies. If this bacteria is detected, the control methods are very specific and for this reason it is unwise to stop carrying out conventional bacteriology in all circumstances. PCR will not detect



Peter Edmondson

yeasts, *Bacillus* or fungi. But it is hoped that new tests will be added to the PCR testing suite in the future.

However, for most high-cell-count herd investigations, the range of PCR tests will cover the bacteria responsible and they provide a fast, accurate and cost-effective procedure.

PCR tests offer another key advantage as they identify the presence of the Beta lactamase gene indicating resistance to penicillin. If the penicillin-resistant gene is present, then it makes sense to ensure that penicillin is not used as a first line treatment against these bacteria.

adds Chris. "We buffer feed and make the most of home-grown forages and cereals."

And cows are bred to suit the system and their milk buyer. "I look for sires with positive values for fat and protein – we look to average 4.5% fat and 3.5% protein as the milk all goes to Barbers for traditional cheddar cheese."

Cell alert

Cow health and welfare is high on the agenda at Green Farm and Shepton Vet Group has a hand in this, making fortnightly routine visits.

"When we went above 250,000cells/ml we consulted the vet immediately," says Chris. "Mastitis guru Peter Edmondson from Shepton Vets arranged for milk samples to be sent for PCR tests at NML from 10 cows that had high average cell counts on the NMR records."

Results were back with the vet within a few days with an accurate breakdown of the mastitis causing pathogens.

Fortunately no Staph aureus was found but the 10 samples consistently showed that the real trouble makers were CNS and Strep uberis strains of bacteria.

"Once we had a fairly clear idea of what was causing the cell count problem we worked with our regular vet Peter Morley from Shepton on a plan to bring levels back in line," adds Chris. "Several cows were dried off early and three were treated during lactation. None had to be culled."

Pushed for space

Some management routines were also improved, particularly in the calving pens. "Being an all-year-round calving herd these pens are in use most of the time. And we're always a bit pushed for space in this department. It's likely that the build up of bacteria arose because we weren't cleaning out the pens regularly enough. That's now changed and we follow a thorough hygiene and disinfecting routine every six weeks."

Chris and the herdsman have also modified the teat dipping protocols and specific pre-dip and post-dip products are used.

As a result cell counts dropped right back without any penalties being incurred from the milk buyer and have remained at this level ever since

"This winter will really be the test, but we have a far better idea of the likely areas where bugs can be harboured and how best to keep these at bay. We've managed to tackle the blip in our cell counts quickly and cost-effectively with the help of the vet and using the PCR milk test." |



Chris Dally and vet Peter Morley make plans to bring cell counts back into line



More attention needed to be given to the calving pen cleaning routine

Amends to teat dipping protocols were also made

