Chewing the cud with Kevin Brewer

Dairy dynamism

A glossy red folder landed on my desk this week promoting forthcoming international livestock and dairy exhibitions in China, Vietnam and India. The Beijing event, set for October, will be China's second major dairy conference in less than a year, following on from their World Dairy Expo this spring and demonstrates the extent to which dynamism in dairying is moving eastward.

I had the honour of speaking at India's very first ILDEX, in New Delhi last summer, and was highly impressed with enthusiasm and commitment of the farmers who attended from several provinces, in particular, some highly professional Sikh producers from the Punjab. Unfortunately diary clashes meant I had to turn down an invitation to speak at China's World Dairy.

I will be in Scotland where Ecosyl is the major sponsor of this year's Scotgrass event near Dumfries. A true working event spread across some 40ha of grassland, where all the latest grass harvesting and ensiling equipment from the leading international machinery manufacturers can be seen in action.

I do hope to make it to Beijing in October and hopefully this will be a reciprocal visit as, through my role as chairman of the British Dairy Consortium, we are working to bring a Chinese delegation over to the UK's Dairy Event in September. The trip will include a visit to some UK dairy farms and an introduction to some of the leading edge genetics and expertise available from British dairy farmers and technical specialists.

Between Scotgrass and the Dairy Event I am hopeful of heading south to take up an invitation to give a technical presentation at the enigmatically named Mystery Creek Field Days, near Hamilton in New Zealand and may also have opportunity to stop off in Melbourne, Australia for a warm up gig along the way. A combination of increasing herd size and greater weather extremes has brought growing interest in forage conservation. Both for strategic protection against drought and as a management tool to boost intake and performance during periods when grazing quality is reduced. In New Zealand especially, baled silage is being taken from pastures where grass growth has got ahead of the cows, avoiding the losses usually experienced when grazing long material and refreshing the pasture at the same time.

It seems that 2007 is turning into something of a show year as the Royal Agricultural Society of England have asked me to put together a representation of the best of UK dairying for the International Pavilion of the Royal Show this July.

Given that Her Majesty The Queen has just approved the British Prime Minister's recommendation to confer a Queen's Award for Enterprise on Ecosyl, how could I refuse? The current mood of the UK dairy industry is not one of celebration however, as we have just completed the lowest production year since the introduction of milk quotas in 1984. It is not a lack of commitment or technical expertise that has plunged producers into the doldrums, but low profitability brought about by a powerful retail industry.

Supermarkets now take around a third of the retail price of milk, leaving both producers and processors to struggle on the slimmest of margins. Not surprisingly, those with alternative options are taking them and both cow and herd numbers are in significant decline.

Production is greatly reduced in Australia too, but here the reasons are climatic rather than economic. Milk is 90% water and perhaps the severest drought Australia has seen in living memory has inevitably hit their dairy industry hard.

Conversely, neighbouring New Zealand has had a very poor summer and with neither country rejoicing in significant stocks of high quality conserved forage, world milk prices are riding high.

Asia is far from immune to either political or climatic catastrophe but, as long familiar dynamism is increasingly combined with confidence and know-how, the current troubles facing Europe and Australasia are providing a clear opening for the rapidly developing dairy industries of the east to command the spotlight on the world stage. ■

by Kevin Brewer • Ecosyl Products Ltd • kevin.brewer@ecosyl.com

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Milk mystery

Like a barn door in a ghost town or the cobwebbed staircase of a deserted hilltop mansion, the UK dairy industry is creaking under the mysterious influence of malevolent forces.

Producer confidence is on the floor with almost 80% planning to invest less than £5,000 a year in their farms and one in six intending to quit within the next two years. Even those committed to remaining in the industry are far from positive, with just one in five planning to expand.

This negative picture, painted by the 2007 MDC Farmer Intentions Survey, is all the more worrying given that the UK has already lost 20% of its cows and close to half of its dairy farms in the last 10 years.

With production this spring at an all time low, the UK is the only one of the world's top 10 milk producing countries where output is falling and with the graph of decline still plummeting in a dead straight line, looks set to be overtaken by New Zealand and drop from eighth to ninth place in the rankings.

Milk quota has become an irrelevance with most milk buyers ignoring individual quota positions and many farmers of the opinion that UK production will never again breach the threshold.

Quota values have plummeted below two pence a litre, buyers have become as rare as hen's teeth and the few that are prepared to invest, may well be speculating on the possibility of the EU opening up the system to cross border trading.

Although high quota price countries such as Holland and Italy would welcome the opportunity to import cheap quota, the resulting rise in values would tempt more UK producers to cash in their chips and quit the dairy casino, hastening the industry's decline.

Concerns regarding security of supply are now such that two of the UK's largest milk buyers have introduced bonus payments for increased production.

But while retail power remains sufficient to keep UK milk prices at the bottom of the EU price league, it is hard to see any significant rise in milk volumes, or producer morale, happening soon.

What a contrast I found in New Zealand! The mood at Mystery Creek Field Days, near Hamilton was nothing less than buoyant, confidence sky high and the dairy industry booming.

No more so than in South Island where a reputed 70 to 80 new dairy farms are currently in conversion, each typically set to carry 500 cows.

Poor lamb prices are prompting a major shift in land use from sheep to cows, but such is the demand, conversion companies are also ripping out plantations of pine trees and claim to be able to complete the conversion from forest to dairy farm in just 18 months. Including the installation of much needed pivot irrigation systems.

Costs are easily justified by rising land prices. Decent grassland is now more expensive than in the crowded UK, typically trading at NZ$25,000 (€14,000)/ha, and much higher where neighbours compete to fulfil ambitious expansion plans.

The driving force is a rocketing milk price, forecast to leap 35% in two years and reach a record NZ$5.35 (€3.05), per kilo of milk solids, in 2008.

New Zealand milk producers have never had it so good and with many able to make a profit at just NZ$4 (€2.30) per kilo, this June's payout of NZ$4.35 (€2.50) was sufficient to ruffle the government.

Fearing that profligate spending by freshly, flush farmers might be sufficient to boost inflation and wreck the economy they promptly raised interest rates within hours of the payout being announced.

Returning to my own wet cows, in very wet Wales, it is difficult to comprehend the logic of disbanding dairy production on the doorstep of our population of over £60m people, when growing worldwide demand is sufficient to drive aggressive expansion, on isolated islands, thousands of miles from any significant marketplace. It's a mystery! ■

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Heat expression

Bridging the Gaps on Fertility in Dairy Cows, an international conference hosted by Liverpool Hope University, brought together the recognised global experts in all aspects of the reproductive field.

Organised by the British Society of Animal Science and European Federation of Animal Sciences, it provided an update on the latest research and technological developments and sought to bridge the gaps between researchers, practitioners and the industry in tackling the well documented decline in dairy cow fertility.

Together with Gwendolyn Jones from the University of Gloucestershire, I have been looking at what we have termed 'heat expression', the intensity and duration of oestrus behaviour between individual animals, and our paper focused on two hidden factors potentially affecting this – exposure to zearalenone and beta-carotene deficiency. A central theme of the conference was distinguishing genuine reproductive issues from problems with herd management and poor heat detection has been identified as one of the major factors contributing to the current slide in fertility. Average heat detection rates on farm of less than 50% in the UK dairy herd are commonly blamed on a decline in the time and skill available, combined with increasing herd size and limited space. Under such circumstances the level of heat expression becomes an increasingly important factor as the lower the level, the harder it is to spot.

Sometimes it is all too easy to blame the cow keeper as although there are plenty of farms where management improvements would reduce the number of bulling cows missed, due to a variety of factors, both the intensity and duration of oestrus behaviour is reduced in modern dairy cows compared to those observed 20-30 years ago.

Of all the factors to consider, there are three reasons why we have taken zearalenone and beta-carotene together: they both have potential to affect the hormonal cycle, producing very similar symptoms; the move to TMR feeding with less grass and more maize and cereal silages increases the likelihood of exposure to one and deficiency of the other; both issues can be resolved simultaneously by preventative dietary means.

All this makes for an interesting theory but, like most milk producers I want to know the on-farm practicalities and see if potential problems exist in reality.

It was simple enough to carry out an independent survey and confirm the displacement of grass.

Results show two out of three farms feeding maize and/or wholecrop cereals, both inherently low in beta-carotene, with dependence on grass silage falling as herd size increases. There is less beta-carotene in the diet.

As maize and cereals are also prone to the fusarium mould that produces zearalenone again, in theory, today's rations increase cows' exposure to this fertility threatening mycotoxin.

A key part of our research, therefore, was to look at a wide range of ration samples to see if it was there in actuality. We did not find it every time, but it was present on a significant proportion of the farms, sometimes at very high levels.

There is an English saying, 'the proof of the pudding is in the eating,' so the third element of our research looks at the impact on cow fertility when the two problems are neutralised.

This allowed us to put to the test a nutritional solution we have developed that combines beta-carotene supplementation with a zearalenone deactivator.

As we anticipated, farmers observed more cows expressing heat, but more scientifically, and perhaps more importantly, computer analysis of breeding records show improved calving and conception intervals with more cows in calf, quicker.

I am happy to send a copy of our summary paper, 'The role of zearalenone and beta-carotene in heat expression', to anyone interested.

But it is important to recognise that experience with this new and exciting solution to problems on some farms is still limited, and that many fertility issues can be improved through better manage-

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Keeping goal

We are waiting for a quote from a UK milk tank manufacturer as we are being forced to increase milk cooling and storage capacity by our dairy co-operative. From April next year we have to be able to keep two days' milk production on farm, at a maximum temperature of 4.5°C, so enabling the co-op to cut milk collection costs in half by collecting every other day, rather than every day as at present.

In principle we are very supportive of the decision as it will greatly reduce wear and tear on the farm track and the move is environmentally positive in reducing fossil fuel use and associated carbon emissions. In practice however, it is a real nuisance and a major expense as we face not only the significant cost of the new tank, we will also have to rebuild the dairy to make room for it, put in an upgraded electricity supply to cope with the increased power demand and completely revamp the water system to provide a greater flow rate and higher pressure.

So often, what seems a simple step to suits in far away offices has, in practice, implications and costs far beyond those envisaged. You might also consider my own planning to be a little short-sighted in not including sufficient 'expansion room' when I built the dairy in the first place. In my defence, the milk tank that occupied the building when I first laid block on block was half the size of the one crammed in to it now and it is an indication of the speed of consolidation in our industry that we are now required to keep four times the milk volume.

Although our milk is of exceptional quality, our remote west Wales location means it is destined for cheese manufacture rather than fresh consumption. I wonder then, why the co-op limits its cost cutting logic to just a 50% saving in transport when extending milk collections to every third day would save 66%? Just a few miles across the water, in Ireland, that is just the type of aggressive approach being taken. Farmers there have been set a much greater keeping goal of seven milkings worth with the EU, via development grants, picking up a substantial proportion of the cost.

As chairman of the British Dairy Consortium I was recently invited to speak at a food safety seminar at the Radisson Hotel in Beijing, jointly organised by the British Embassy and the Ministry of Agriculture of the Peoples Republic of China.

The Chinese Minister said it was the perfect time to focus on food safety in dairy production given recent growth and the continued rate of expansion in both production and consumption of dairy products in the region.

My focus was on cow welfare, hygiene and traceability with a particular emphasis on somatic cell counts, mastitis prevention, bacterial contamination and farm assurance systems that ensure the recommended practices are actually implemented.

The need for greater attention to these areas was spelled out to me very clearly, not by what I saw on the farms I visited around Shanghai and Yangzhou which were all well run, but by the fact that in Beijing we had to buy a new carton of milk every day as it would not keep for more than 24 hours.

The smallest farm I saw on this visit had 1,200 cows and the change in investment, development and enterprise culture surrounding Chinese dairying was typified by a brand new 2,000 cow unit on the edge of Shanghai. Costing around £1.5m (US$3m), it was a private venture established by two Chinese businessmen rolling over profits made in real estate in the city. That it employs close to 200 people, one per 20 cows, is a reflection of both improved efficiency compared to the one per 15 cows employment rate I saw on a government farm and the acrobatic balancing act between communism and capitalism currently being achieved by the ruling Politburo.

Back in the UK, our own government has also turned its attention to keeping goals with plans to dump the concept of fresh milk in favour of 100% UHT, a move they reasoned would secure the long term future of the polar bear and riverside cottages.

I am not sure what disturbs me most, the failure of suits in faraway offices to grasp reality or their inability to taste it. ■

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Breeders digest

A detour to Xian to view the Terracotta Army and a few days visiting impressive thousand-cow dairy farms around Shanghai, but not being able to see the sky, are perhaps the most indelible images from my recent visit to China.

This was my fourth trip to the rapidly developing economic superpower and I got to travel further, see more and understand better, with a glimpse at some of the real China beyond the world city metropoli of Beijing and Shanghai.

But I also had to sing for my supper, presenting seminars at Yangzhou University, speaking on food safety alongside the Chinese Minister of Agriculture in Beijing, publishing a new paper at the International Livestock and Dairy Exhibition and giving two lectures as part of a technical programme which attracted attendees from Europe, North America and Asia in addition to the interested locals.

Maize appears to be the base of dairy cow diets on most of the larger farms, both as silage and with maize flour serving as the major concentrate, often in a TMR also including dried molassed sugarbeet pulp, brewers' grains and dried alfalfa cubes. Much of the maize silage was of good quality but usually chopped too long such that cobs were sliced and had many whole grains still attached.

Cows produce more milk from silage that is easier to digest, but the negative relationship between crop digestibility and dry matter yield requires a compromise to be made at harvest, with some sacrifice of both digestibility and protein content necessary to allow crops to bulk up to a reasonable yield.

Although lower digestibility reduces a dairy cow's daily forage dry matter intake there are at least four methods of increasing both; feeding legumes, confining cows and mechanical and biological treatment of the crop. Increasing forage digestibility by one unit can be expected to increase dry matter intake by 1.5%, leading to a daily milk production increase of 0.37kg per cow.

Legumes are inherently high in digestibility and shown experimentally to support higher production. Mixing them with less digestible grasses or cereals, either in the TMR or by growing them together in the field (bi-cropping) will increase the average digestibility of the forage portion of the ration.

Housing cows year round, rather than sending them out to graze, increases their intake by up to 20% more than the maximum 20kg of forage dry matter that appears to be a cow's upper daily limit in pasture systems. Mechanical processing of crops during harvest to produce shorter material, crack or crush maize (corn) grains, or at least disrupt the waxy cuticle, will ensure better access of rumen bacteria for improved digestion.

Biological treatment is also effective with a growing number of reports showing that inoculation of forage with the MTD/1 strain of Lactobacillus plantarum results in statistically significant increases in digestibility.

The greatest improvement arising on grass harvested at low digestibility and only limited improvement arising once original harvest digestibility exceeds 80%.

Improving forage digestibility results in higher production due to increased intake and/or improved efficiency of forage utilisation, but the ideal digestibility to aim for depends on the depth of breeding behind the cow being fed. When diets of low digestibility are fed intake is limited mainly by physical factors, rumen size and rate of passage through the cow's digestive system, so any improvement in digestibility will result in higher intake and production until forage digestibility reaches around 67%.

Therefore, maximising production from native or improved native cows can be achieved by improving forage digestibility to this 67% break point.

Improving forage digestibility above 67% can produce further increases in intake and production provided the cows being fed have been bred to suit as, at this level, physiological factors, production capability and metabolic size, also have important effects. Maximising production from high genetic merit cows requires forage of at least 67% digestibility to ensure it is not a limiting factor. ■

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Technicolour turncoat

An international group of leading technological thinkers were asked to identify the grand challenges for engineering in the 21st century. This is engineering in its broadest sense as the 18 strong team of experts, convened by the US National Academy of Engineering, contains biologists and entrepreneurs as well as physicists and the outcome of their deliberations has recently been published.

They came up with 13 challenges: three on health; two each on energy, environment and security; plus water supply, urban living, virtual reality and education.

They can be viewed in detail at www.engineeringchallenges.org where there is also an opportunity to vote on which you think is the most important. Agriculture gets mainly negative coverage under one of the environmental challenges, 'Managing the nitrogen cycle', which identifies modern farming's reliance on nitrogen fixation as a major issue and looks for improvements in fertiliser technologies.

But while water is featured, the experts rightly recognising that about one in six people around the globe do not have adequate access to clean water, my concern is the absence of food supply, food security or starvation as 21st century issues. OK, we are a few decades down the line from Band Aid and this is mostly a western based group, where everything has to be built that bit stronger to support an increasingly obese population, but I do sense an air of complacency.

On a rare visit to a London theatre, I attended the second night of 'Joseph and His Amazing Technicolour Dreamcoat'. This Andrew Lloyd-Webber/Tim Rice musical is based on a biblical dream reader who persuades ruling powers to build a multitude of warehouses and fill them to the rafters with surplus grain from seven years of plenty, ensuring their survival through seven subsequent years of famine. It reminded me of the Band Aid period of EU butter mountains, when it seemed that every second shed in Europe was sequestered to store surplus skim milk powder or grain. A particular phrase of the time was: "Don't complain with your mouth full," a prod to critics of the subsidy driven intervention system that had succeeded in bringing food security to Europe.

In common with most dairy farmers around the world, we are currently enjoying higher milk prices motivated by the sudden hike in dairy commodity values. The prime causes of this price leap are usually cited as increased demand and reduced supply. Demand growth is mainly attributed to China, specifically, or Asia, generally, due to growing population or changing diets due to increased wealth or both. In contrast, supply weaknesses are usually attributed to natural causes, primarily flood or drought in Australia and New Zealand.

To me, however, this looks a little bit too much like explanation after the fact, in the same way that a stockbroker can give you a dozen reasons why the market plummeted, but rarely one before the fall begins. Yes, demand has been strong and yes, there have been some rough conditions down south, but these are not new phenomena, rather an ongoing situation for several years. What has changed is international shed policy, a 180 degree reversal from stacking warehouses to the rafters to shipping out everything we can. When the world's barns are full they buffer the deficits of natural disasters and political changes, but when they are empty, even tiny fluctuations in the supply demand balance ripple through the market.

I feel the world is running too close to not being able to feed itself so it is a relief to see food supply in the 21st century firmly on the agenda of one group of scientists and thinkers.

A new report from Chatham House, the London based Royal Institute of International Affairs, suggests the rise in global food commodity prices is more than just a short term blip and throughout 2008 the Chatham House Food Supply Project will be looking at critical policy choices in securing the supply of wheat and dairy products. The ability of global food production to meet rising demand is an issue of fundamental importance to us all. ■

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