

# Controlling DISEASE



*The spectre of disease is never far away for livestock keepers. But the virtual eradication of bluetongue across Europe within a few short years by vaccination provides an object lesson in the control of livestock disease, argues veteran Country Smallholding writer Alan Beat*



**R**emember bluetongue? The viral animal disease that dominated media headlines in 2006 by threatening the entire EU livestock sector has already been largely forgotten; but before it disappears altogether from our collective memories, we should pause to take stock and learn from the experience.

Historically, bluetongue has been an exotic disease of warmer climates and was previously unknown in the UK or northern Europe. My attention was first drawn to the potential threat it posed by the Royal Society Inquiry into Infectious Diseases in Livestock, following the disastrous foot and mouth epidemic in 2001. The report, published in July 2002, mentioned bluetongue as one of several exotic diseases, whose range was extending northwards with climate change, and recommended careful surveillance to monitor this.

## 2006

In the event, the virus did not creep slowly and inexorably northwards but, instead, appeared abruptly on August 18, 2006, on a farm in the Netherlands, some 300 miles north of any previous outbreak. An EU vaccine bank held stocks against Mediterranean strains for just such an emergency, but, within days, this new strain was identified as BTV-8, originating from sub-Saharan Africa and against which the stored vaccines were ineffective.

Control measures commonly employed against other exotic viral diseases, such as the slaughter of infected animals coupled with movement restrictions, do not work for bluetongue, which is

spread by biting midges. However, vaccination protects livestock against acquiring infection when bitten by the insect vector, so breaking the cycle of spread; and past experience in southern Europe had shown that vaccinating 80% of the livestock population resulted in elimination of disease.

In 2006, the authorities were caught unprepared. Leading vaccine manufacturers began work on the development of a vaccine to combat BTV-8, a process that would normally take four or five years, but might be achievable within two years when fast-tracked.

## 2007

Twelve months later, on August 18, 2007, there were 1,000 confirmed infected farms spread across several European countries. This number rose to 2,452 by August 31, and exceeded 10,000 by September 18. Sheep were the worst affected livestock, with one in five infected animals dying.

On September 22, the first UK case was recorded at a farm near Ipswich, followed by several more in the same area over the next few days. Bizarrely, these infected cattle were slaughtered by DEFRA, even though this could have no impact on the spread of disease. By September 29, a total of 11 cases had been recorded in East Anglia and DEFRA finally accepted that the disease was 'circulating' with the result that no more animals were killed. Across continental Europe the number of infected farms had risen to 20,402, and by late November exceeded 45,000.

By December, there were 66 cases recorded in

the UK. On December 14, a cow imported from Germany was confirmed with the disease and, on December 20, a batch of 20 cattle imported from the Netherlands were also confirmed as infected. These imports caused considerable controversy, but were permissible under EU rules. The animals had been tested clear on the farms of departure, but tested positive several days later at their UK destinations - which is to be expected when disease is incubating. Several similar cases followed.

On December 19, DEFRA placed an order for 22.5 million doses of the new vaccine that was being developed in record time by cutting short the various test procedures normally required.

## 2008

By January 31, 2008, surveillance testing across the Netherlands had found that 60% of all cattle were infected. On March 5 it was revealed that BTV-8 had been found in new born calves during the 'vector free period' when it was assumed that new disease outbreaks could not occur as midges are inactive during the cold winter months. This strongly suggested that maternal transmission was occurring (from cow to foetus), presenting a new and threatening development. By March 7, the UK had recorded 101 infected farms.

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On May 1, 2008, the first BTV-8 vaccine was given to UK livestock at a high-profile event to promote JAB, the Joint campaign Against Bluetongue, supported by all major farming organisations with the soundbite 'don't hesitate, vaccinate'. DEFRA were pursuing a policy of voluntary vaccination with all costs born by UK farmers, whereas most other EU countries were providing subsidised or free vaccine within a compulsory framework. NFU President Peter Kendall said: "It is vitally important that all farmers with susceptible livestock vaccinate their animals as soon as it is possible for them to do so."

In France, new cases ramped upwards as midge activity increased again through the warmer months of 2008. By September 25, there were 16,103 farms recorded as infected with BTV-8, plus a further 1,494 infected with a different strain, BTV-1. By November 10, these numbers had risen to 21,614 and 3,340, respectively, and, faced with such explosive growth, the French authorities dropped their voluntary programme and began compulsory vaccination against both strains. In contrast, Germany's compulsory programme had, by September 6, covered 70% of cattle and 90% of sheep and goats, with the result that only 522 cases of new infection were recorded.

In the UK, the Farming Minister Jane Kennedy stated on November 20, that "...sales data from the supply chain suggest the overall uptake of vaccine



FROM TOP: An animal infected with bluetongue, a biting midge that spreads the disease, infected cattle and advice leaflets from DEFRA.

across the whole of England is around 60 per cent. Uptake in (a) East Anglia may be in the region of 80 per cent. or above, (b) in the South West may be slightly lower than this, and (c) in the north of England may be less than 40 per cent." However, the TV programme *Countryfile* conducted an independent poll to report only 15% coverage across England and Wales as a whole.

No disease was found to be circulating across the UK in 2008.

## 2009

On April 15 2009, the French Agriculture Minister publicly thanked all participants for their efforts in the biggest vaccination campaign ever undertaken in France, reporting that 42% of susceptible livestock had been vaccinated ahead of the legal deadline at the end of the month. By October 9, France had recorded just 67 cases, compared to 32,000 at the same time the previous year.

## 2010

On November 2, 2010, the *Farmer's Guardian* reported that "figures released by the European Commission indicate that bluetongue has been virtually eradicated from mainland Europe, with just two recorded cases of BTV-8 this year". NFU Scotland's Vice-President, Nigel Miller, said the vast reduction in the number of cases of BTV-8 in Europe was "little short of miraculous".

## Analysis

The control of exotic diseases among livestock is widely seen as an extremely complex matter involving mass slaughter, compulsory restrictions on animal movements and the large-scale deployment of state resources, administered by a bureaucratic jungle of regulation devised by an army of civil servants and enforced by police, or even the armed forces. The cost, both to farming and to the wider economy, can be enormous.

Bluetongue is different because slaughter and movement restrictions cannot play a significant role in defeating it. At a stroke, this emasculates the usually unstoppable juggernaut of financial and political self-interest coupled with deep-seated prejudice, leaving no other choice but to embrace vaccination as the sole method of control. And, whichever way you look at it, the central lesson of this particular epidemic is crystal clear: vaccination works. Despite the fast-track deployment of an unproven vaccine; despite the relative inefficiency of bluetongue vaccine which confers immunity for only one year; despite wide differences of implementation between neighbouring states; despite countless animals remaining unvaccinated; despite the continued movement of infected animals into disease-free regions; in fact, despite every obstacle placed in its path, vaccination nevertheless succeeded in spectacular fashion by rapidly containing and then eliminating the disease.

Why are we surprised by this in the UK? We shouldn't be, for there are many historical precedents of vaccination being used to control and eliminate viral diseases of livestock, just as there are for humans. As increasing numbers are immunised, →

## A FURTHER LESSON IN THE ORIGINS OF BLUETONGUE

The secondary lesson of the bluetongue epidemic lies in its origins. How was an animal disease from sub-Saharan Africa able to reach northern Europe in one leap? Various official studies have failed to identify a specific source, but we can be almost certain that it was introduced by the movement of infected animals.

Of course, there are man-made controls in place that are supposed to prevent such things from happening, but the history of epidemics is littered with examples of bureaucratic barriers proving ineffective. Virus does not recognise national borders or paperwork. During the UK bluetongue epidemic, there were several cases of imported animals that met all the legal requirements for movement, yet turned out to be infected soon after arrival. Any of these could have sparked fresh outbreaks. To be fair, the NFU did recognise the danger, albeit late in the day, and

encouraged its members to stop importing animals from affected regions of Europe during the epidemic. However this is the equivalent of the mythical Dutch boy putting his finger in the leaking dam. The root cause of this epidemic, like so many before it, is the huge international trade in live animals and their products.

I covered this topic in some detail in my articles on the origin and spread of avian flu (see CS September and December 2007). It is sufficient to repeat here that I argued for a complete ban on non-essential imports of livestock; and that genuinely essential imports should be closely regulated and tested at point of entry - that is, while in quarantine at the border, not on arrival at the farm as currently practised. Beyond that, we should restructure both farming and food processing to actively promote small-scale, locally-based production that better supports the national interest i.e.

smallholding; and progressively dismantle the huge international trade that swaps identical commodities between nations while damaging the public interest and the environment.

The bluetongue epidemic should never have happened; to a large extent, it was both predictable and preventable. But the World Organisation for Animal Health (OIE) and the Food and Agriculture Organisation of the UN (FAO) owe their very existence and funding to the fundamentals of promoting international agricultural trade and developing intensive methods of production, so, as three independent scientists put it in a published paper on H5N1 avian flu "their reticence to accept that this trade is the main agent of global dispersal is perhaps unsurprising". For as long as large-scale international trade continues, further epidemics of ever-more exotic diseases are almost inevitable.

→ so the spread of infection must decrease; once a significant majority are protected, usually around 80% in affected regions, spread reduces towards zero and disease dies out altogether. But perceptions have long been distorted in the western world by the snobbery of 'disease free without vaccination' status, an entirely artificial construct that distorts international trade by conferring false advantage on states using mass slaughter and movement restrictions instead of vaccination.

This was graphically illustrated during the UK foot and mouth epidemic of 2001, when every possible pseudo-scientific and trading argument against the use of vaccination was put forward. When the government chief scientist was eventually persuaded by continuing spread of disease to change tack and recommend vaccination, deployment was blocked by the intransigent opposition of the NFU, condemning several million animals to an unnecessary and often barbaric death; a policy that devastated rural communities and drove some of their own members to commit suicide.

That same year, Uruguay, in South America, suffered a parallel epidemic among a livestock population of 10 million cattle and 12 million sheep, in an area of similar size to the UK. Animal movements had spread the disease widely before it was recognised. Over the first week, nearly 7,000 infected animals were slaughtered, but once the wide dispersal of disease was realised, no further killing took place. Instead, all livestock movement was banned and vaccination of cattle only was begun. Coverage was complete within two months and the movement ban was lifted. The last case of disease was recorded just four months after the first.

So Uruguay extinguished a major epidemic, similar in all main respects to the UK pattern, much faster than here, and began re-exporting sooner. Slaughter and costs were minimal, indeed insignificant by comparison to the UK. The close proximity of a fully-susceptible sheep population to



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ALAN BEAT

the cattle did not influence the course of the epidemic, since sheep are scientifically a 'terminal' host in which foot and mouth disease simply peters out. Note that even infected premises were not slaughtered after the first week; quarantine, vaccination and movement restriction were sufficient measures.

The success of vaccination in Uruguay and other far-off countries is largely overlooked here in the UK; but the lesson of the European bluetongue epidemic is not so easily ignored. We must learn to put aside deep-seated prejudice and embrace vaccination as a highly-effective defence

against exotic diseases of farm livestock. It fully deserves to be regarded as a method of first use, not of last resort.

 **Writer** -----

Alan Beat and his wife Rosie have run a Devon smallholding of 16 acres for 20 years. They offer educational visits and also run training courses through the Yarner Trust at Welcombe near Bideford. Alan's book *A Start in Smallholding* was published in 2004.

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