Bovine tuberculosis: the role of badgers

In 2011 bovine tuberculosis (bTB) 26,000 cattle were slaughtered in England and compensation payments of £90 million were paid out. The Environment secretary, Owen Paterson, insisted that culling badgers, which can carry TB, is a necessary measure to reduce TB, and derided widespread opposition as ‘sad sentimentality’.

Key facts and figures

- 5.5 Million – total number of TB tests on cattle in England in 2011.
- 26,000 – approximate number of cattle slaughtered for TB control in England in 2011.
- 3,741 – number of new TB incidents in 2011 (herds where at least one animal tests positive for bovine TB, when the herd had previously been TB free).
- 11.5% of cattle herds in England were under cattle movement restrictions at some point in 2011.
- 23.6% of cattle herds in the South West were under cattle movement restrictions at some point in 2011.
- £500 million – the amount it has cost the taxpayer to control the disease in England in the last 10 years.
- £1 billion – estimated cost of TB control in England over the next decade without taking further action.
- £30,000 – the average cost of a TB breakdown on a farm, of which around £10,000 falls to the farmer. (Source DEFRA)

Some 24% of farms in the southwest of England have herds infected with bovine TB. The vice-president of the National Farmers Union sees a cull as only part of the solution. He believes that the lack of an organized plan to tackle bovine TB is what the majority of farmers are fed up with. For example, he claims that farmers have been promised a vaccine for over 20 years but this has not yet been produced. Nevertheless, a 10 year £50 million taxpayer-funded research program by the Independent Scientific Group (the ISG) showed that killing large numbers of badgers would have no meaningful impact on the spread and control of this disease.

TB in cattle is a debilitating, highly infectious respiratory infection, caused by the organism *Mycobacterium Bovis*, which mainly affects the lungs and kidneys. Infected animals can become emaciated and weak, and eventually die. However, in countries where test-and-slaughter policies exist, this doesn’t happen as the disease is detected in its early stages. bTB in badgers, though debilitating, is rarely fatal. Other animals also experience TB including foxes, squirrels, rats and deer.

Cattle catch TB mostly from other cattle by breathing in bacilli expelled by infected animals as tiny aerosol droplets. The risk of disease spread is greatest in enclosed, poorly ventilated areas, such as barns and sheds where cattle spend months confined together, but any contact between cattle, at shows
and markets, for example, can transmit the disease. According to Defra, ‘cattle-to-cattle transmission is a serious cause of disease spread’. Badgers can catch TB from other badgers, from cattle (probably through infected urine and faeces) and possibly from other infected farm animals and wildlife.

However, the rate of badger infection is quite low. The Randomised Badger Culling Trials (RBCT) suggested that that even in bovine tuberculosis (bTB) hotspot areas, less than 15% badgers were infected. When road-killed badgers (the main cause of early mortality in badgers) from seven hotspot counties were examined, the figure was again 15%.

The National Farmers’ Union has called for a cull of badgers. In its report, the ISG stated ‘…badgers do contribute significantly to the disease in cattle’. However, it also stated that: ‘…it is unfortunate that agricultural and veterinary leaders continue to believe, in spite of overwhelming scientific evidence to the contrary, that the main approach to cattle TB control must involve some form of badger population control’ and ‘Given its high costs and low benefits we therefore conclude that badger culling is unlikely to contribute usefully to the control of cattle TB in Britain, and recommend that TB control efforts focus on measures other than badger culling.’

An earlier bTB epidemic in the UK that began in the 1930s was by 1960 infecting 16,000 cattle every year. It was brought under control and all but eradicated by the cattle-based controls. Then in the 1980s and 1990s bTB began to increase again. The reasons were not clear. Farming organisations blamed badgers. There were also changes in the organisation of the cattle industry. There was a relaxation of cattle testing and slaughter– and movement-controls. There was also an intensification of dairy farms and the growing trend towards larger herds and over-wintering them in sheds and barns.

The Government set up the Randomised Badger Culling Trial in the late 1990s. Thousands of badgers were killed in this project but the ISG concluded, in 2007, that culling badgers would have no meaningful effect on the control of bTB and that farmers should concentrate on improved cattle controls. In 2009–2010, there was a 15% reduction in bTB due to improved testing of cattle, movement controls and improved cattle husbandry. This improvement has been achieved without any badgers being killed.

There has been some calls for the vaccination of badgers. A vaccine for badgers has been licensed for use and development work is continuing to produce an oral bait vaccine. The Badger Trust believes that
a vaccine provides a very positive way forward in the long-term control of this disease. They are also calling for a cattle vaccine which will not only protect cattle from the disease but will also allow the UK farming industry to export cattle to EU countries.

**Cattle tested positive for bTB**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
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<tbody>
<tr>
<td>1986</td>
<td>235</td>
</tr>
<tr>
<td>1996</td>
<td>2,541</td>
</tr>
<tr>
<td>2006</td>
<td>18,342</td>
</tr>
<tr>
<td>2010</td>
<td>28,511</td>
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</tbody>
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After foot and mouth disease ravaged the country, farmers began to replenish their herds and move cattle all over the country without testing them for TB. However, EU laws currently prevent cattle from being vaccinated against the disease because the effect of current inoculations can make it difficult to detect if the disease is present. That ban discourages any pharmaceutical company from getting involved in the research.

The RSPCA’s chief executive Gavin Grant called for ‘badger-friendly’ labels on milk and yoghurt so shoppers can boycott farms involved in culls.
According to an editorial in the Guardian, the licensed killing of badgers in parts of Gloucestershire and Somerset could achieve a number of things:

- it could advertise the existence of bTB in British dairy herds
- it could polarise opinion in the countryside
- it could cost the farmers involved more than they could gain
- it will almost certainly provoke active protest and put even more pressure on already hard-pressed police forces.

However, the paper also stated that:

- it would not limit bovine tuberculosis, even in the target zones of Gloucestershire and Somerset.
- in fact, shooting and gassing did not eliminate bTB, and could possibly spread, the disease because badgers disturbed in one area could migrate, taking the infection with them.

According to Prof John Bourne, stricter measures to stop cows spreading tuberculosis to other cows are the only way to combat the disease effectively, as they had in the 1960s when TB was virtually eradicated in England. It is not badgers that spread the disease throughout the country; it is cattle. A recent European commission inspection of England's biosecurity revealed a number of failures, including missed targets in the rapid removal of infected cattle with TB and weaknesses in disinfection at farm, vehicle, market and slaughterhouse levels. Welsh ministers have backed plans for vaccination in tackling TB, after abandoning their cull plans. According to DEFRA, ‘vaccination remains a long-term goal and we are investing £15.5m in developing workable vaccines over the next four years’.

Useful websites

- The Badger Trust homepage
- The Badger Trust’s Questions and Answers about Badger culling
- DEFRA on Bovine TB
- Controlling the disease – the government’s approach

Activities

1. How many cattle were slaughtered in England in 2011 due to TB? (1)
2. How much has TB control cost in England over the last decade? (1)
3. How do cattle catch TB? (3)
4. Approximately how high is the rate of badger TB infection? (1)
5. How was the 1960 bTB outbreak controlled? (3)
6. Describe the spread of cattle infected with bTB as shown in Figure 1. (4)
7. Describe the changes in the number of cattle infected between 1986 and 2010. (4)
Suggested answers

1. 26,000

2. £500 million

3. Cattle catch TB mostly from other cattle by breathing in bacilli expelled by infected animals as tiny aerosol droplets. They can also catch it through contamination of feeding and watering sites and from infected wildlife, including badgers and deer.

4. 15%

5. Through cattle-based controls e.g. testing, movement controls and improved husbandry.

6. In 1985, most cases were in the South West of England but there are also many scattered outbreaks. By 1996, the distribution of cattle infected with bTB was concentrated in the South West and in south Wales. Scattered outbreaks have become more common and more dispersed from the core area. By 2006 the disease had spread northwards into the West Midlands and there were isolated outbreaks throughout much of the country. By 2010 the disease was concentrated in the South West and south and west Wales but by now the core area has spread to include much of the West Midlands.

7. Between 1986 and 2006 the number of cattle testing positive for TB increased by more than ten-fold (ten times). In the following decade over 15,000 more cattle tested positive, an increase of over seven-fold. In the four years between 2006 and 2010, over 10,000 more cattle became infected. The numbers show an accelerating amount of cattle infection.