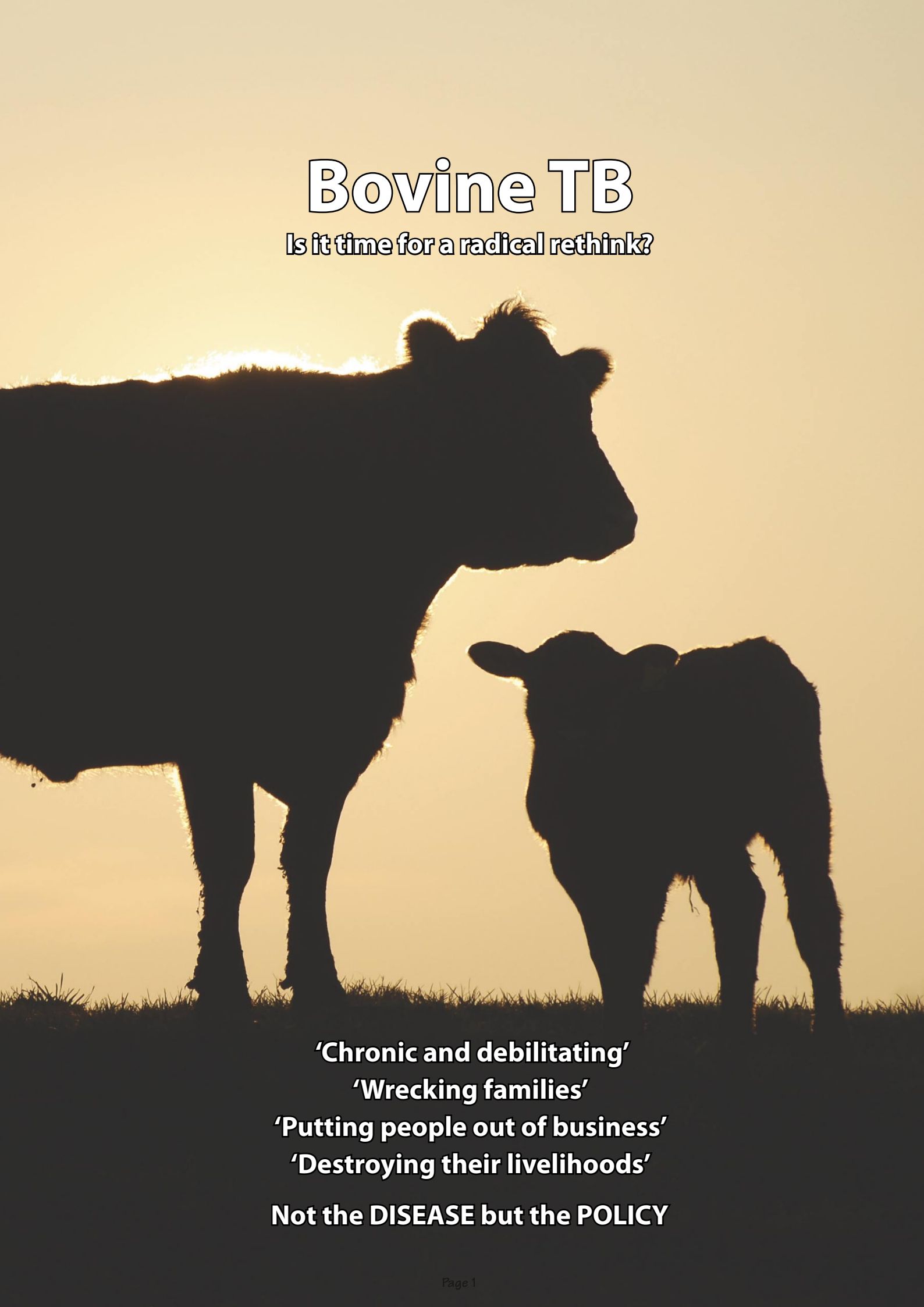
Bovine TB

Is it time for a radical rethink?



‘Chronic and debilitating’
‘Wrecking families’
‘Putting people out of business’
‘Destroying their livelihoods’

Not the DISEASE but the POLICY

RETHINK Bovine TB is a research group privately funded by people with an interest in examining public policy as it affects agriculture, animal diseases, animal welfare and the financial viability of farming.

The principal authors of this report gratefully acknowledge the original research and evidence offered to us by academic and industry experts and information and data provided by the Department for Environment, Food and Rural Affairs (DEFRA).

We hope that this report will serve to stimulate discussion and bring Bovine TB policy, essentially unchanged for many decades, rapidly into the twenty first century. We look forward to and welcome comments and criticism from all who read it.

Please contact Michael Ritchie, Press Officer on 0207 993 5404 or email: farming@rethinkbtb.org with your comments and feedback.

For more information visit www.rethinkbtb.org

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With thanks to Lawrence Wright for cover photo

1. Introduction

In this document we will discuss Bovine TB policy in England and Wales, and propose radical but practical and cost effective solutions.

We will draw our evidence from a variety of sources, but in particular Defra (the Department for Environment Food and Rural Affairs).

We will avoid complex statistical manipulation, as the same data and numerical evidence is being used to prove opposing views. We will instead concentrate on simple clear facts, and demonstrable cause and effect.

2. Summary

Very few (in 2009 only about 45) of the human cases of TB in the UK are caused by the bacterium responsible for Bovine TB in cattle, Mycobacterium bovis. The chances of humans catching Bovine TB in the UK from cattle are negligible because of pasteurization of milk and cooking of meat.

Infected cattle have little chance to develop the disease and seldom show symptoms during their short economic lives. The principal animal welfare implication is not the disease but premature slaughter under the current 'test and cull' policy. The effect of the policy is worse than the disease.

The reasons for the current policy; human health, exports, animal welfare and what Defra calls the "interests of wider society", do not stand examination.

The policy relies on a flawed diagnostic test that even Defra describes as "imperfect". It leaves potentially infected animals in the herd, and falsely condemns large numbers.

The policy is causing widespread losses and distress to farmers and is a burden on the taxpayer. After 60 years of cattle testing and culling, further decades of slaughter separate us from an uncertain chance of TB free status. Taxpayers' money (currently over £100 million per annum) could be better spent on human health.

Cattle vaccination will be licensed next year (2012). Only the EU prevents us from using vaccination to replace the current policy, or from leaving Bovine TB control at the discretion of individual farms.

Whatever aspect is considered - farming profit, cost effectiveness for the taxpayer, animal welfare, human health, conservation or food security - the current policy is a resounding failure.

This document proposes radical solutions

3. What is Bovine TB?

Bovine TB is caused by the bacterium Mycobacterium bovis (M.bovis). It is difficult to diagnose, particularly in the early stages. The very rare clinical signs may include emaciation, lethargy, weakness, anorexia, low-grade fever, pneumonia with a chronic moist cough, lymph node enlargement and visible or microscopic lesions in infected organs.

Any mammal can contract Bovine TB, but surprisingly little is known about how it is spread, what makes animals susceptible to it and how it develops in the host animal.

It is very unusual for humans to catch Bovine TB. In 2009 for example it accounted for only 0.5% or about 45 of the 9,040 human cases of TB in the UK[1]. Most cases of TB in humans are caused by a different bacterium, Micobacterium tuberculosis.

There is uncertainty and controversy over the way Bovine TB spreads in cattle. It is most likely to enter uninfected areas as a result of cattle movement, and then primarily spread between cattle in respiratory secretions[2]. There is a correlation between the number of cattle and the number of badgers infected in an area but the reason is not understood[3]. Explanations suggested include cross infection between the species (either badger to cattle or cattle infecting badgers) or a common risk factor causing both species to be susceptible. Very little is known about the possibility that other domestic and wild mammal species are infected.

Even in areas where it is rife, most wild and domestic animals fight off the disease. This is the natural and correct response of the immune system. A few animals may succumb to infection and develop symptoms (i.e. become 'ill').

The working lives of cattle are generally short - typically 5 years for dairy cows and up to 3 years for beef animals. Surplus calves are killed at birth or reared as veal for slaughter at about 20 weeks. In most cases an animal that has reacted to M. bovis bacteria is slaughtered long before it has a chance to develop the disease.

4. Reasons for current Bovine TB policy

Every policy and action of government must have a reason. Defra offers four reasons (quoted in bold italic below) for current Bovine TB policy[4]. We will consider each in turn.

> *"Protection of public health - historically this has been the main reason for Government intervention on bTB, based on risks to consumers from milk and meat. There are also minimal occupational health risks."*

This seems a powerful and compelling argument until the evidence is considered.

Defra and the Health Protection Agency admit that the risk of humans catching Bovine TB from meat is negligible. So negligible that potentially infected cattle slaughtered after failing a TB test, and cattle found at abattoirs to be infected, are sold for human consumption (with any TB lesions which happen to be visible removed).

Defra and the Health Protection Agency admit pasteurisation of milk kills M bovis bacteria, removing any chance of infection. As for occupational health risks, people routinely testing and handling cattle take no specific precautions against infection by M bovis. This relaxed approach is justified by the lack of resulting cases of infection.

"International trade – the presence of bTB on a farm is potentially an impediment to EU trade in live cattle and cattle products."

The relevant EU provisions only affect export of live cattle, not meat and dairy products. The value of live cattle exports in 1995, the year before the BSE ban, was £77.6 million. Since the ban was lifted it has never exceeded £3.3 million[5]. Even at the pre BSE level this controversial trade (which includes large numbers of calves sold at low prices for rearing in continental veal crates) is hardly worth over £100 million of taxpayers' money every year on Bovine TB control.

"Protect/promote animal welfare – cattle are currently exposed to a level of disease which is resulting in the slaughter of around 22,000 animals each year."

Those 22,000 animals (and in recent years a much higher number) are slaughtered not because of Bovine TB but because of the control policy. The control policy relies on imperfect testing and unnecessary slaughter.

"To protect the interests of wider society/economy – the existence of a reservoir of infection in wildlife, particularly badgers, is a significant factor in our ability to control the disease in cattle. However, badgers are protected by law and are valued by wider society."

This is a self serving and circular argument. The only reason for concern about Bovine TB in wildlife is the controversial threat to cattle under the current policy. Bovine TB in wildlife is not in itself a matter of sufficient concern to drive the current Bovine TB policy. Badgers are threatened not by Bovine TB but by an outcome of the policy.

We hold that not one of the above arguments proposed by Defra stands examination.

Defra's arguments do not stand up to examination

UK policy is ultimately driven by the EU requiring member states to eradicate Bovine TB[6]. No specific reasons for EU Bovine TB policy can be found, except those for the overall Community Animal Health Policy which covers a multitude of diseases, including Bovine TB. The reasons stated for the Community Animal Health Policy[7] are similar to those used by Defra in respect of Bovine TB, and just as irrelevant to Bovine TB.

Not one of the reasons for UK or EU policy stands examination. For government to intervene in private or business affairs, and in particular to take and kill livestock, there must be a sound justification rooted in the common good. No such justification has been advanced.

5. How current policy is delivered.

Under the current UK 'test and cull' policy cattle are tested at intervals determined by risk of infection. Those which fail the test are slaughtered and severe restrictions on cattle movement are placed on the farm.

In the test primarily used in the UK, a small amount of tuberculin (a sterile extract obtained from a culture of M. bovis) is injected into the animal. A swelling will occur if the animal has previously been challenged by, and the immune system has reacted to, tuberculosis bacteria.

However reactions of the animal's immune system to other types of mycobacteria can also cause the swelling. To reduce the number of false diagnoses this would lead to, a preparation of M. avian, the avian form of tuberculosis, is injected nearby. M. avian is widely present in the environment. It is not harmful to cattle although their immune system reacts to it.

The swellings are compared after 72 hours. Statistical studies rather than an understanding of the underlying biological mechanism have indicated that if the M. bovis swelling is significantly larger than the M. avian swelling, a reaction to M bovis has occurred. The animal is then deemed to be a 'reactor' and killed.

The current bovineTB policy is without foundation

This test is known as the 'skin test' (or more properly as the single intradermal comparative cervical tuberculin test).

A blood test, the gamma interferon test, is also used on some occasions as an ancillary test. It evaluates the same immune response but is conducted in the laboratory. There are documented cases of wildly differing results from using the two tests on the same herd.

If an animal fails either the skin or blood tests it is slaughtered.

Serious concerns (some of which we will explain below) exist among scientists and farmers about the accuracy of the tests, while Defra goes as far as to admit the tests are 'imperfect'[8].

6. Why 'test and cull' is not working.

After sixty painful and expensive years of testing and slaughtering cattle and an intervening period of relatively few incidents of Bovine TB, we are again several decades from any chance of 'Official TB Free' status. As the Bovine TB Advisory Group concluded in their final report to Defra[9], "Bovine TB has been a difficult and demanding problem for many years. There are reasons for believing that it can be controlled and finally eradicated but this will require a long-term commitment by all stakeholders and take at least 20 years."

Can we afford the cost, and will farmers tolerate, another 20 years of movement restrictions, disruptive and inaccurate testing and compulsory cattle culling?

Over the period 1998 - 2009 the number of new herd incidents[10] in Great Britain increased by 276%, and the number of cattle consequently culled by a staggering 477%. Defra states that;

> *"The causes of the long-term increase in bTB in GB are not well understood as there are likely to be many factors involved".*[11]

In other words Defra do not know why there has been a dramatic long term increase, or why Bovine TB policy has failed.

1. False positives.

According to Defra[8] it falsely condemns only 1 in 1,000 cattle tested. (The 'specificity' of the test). This makes the test sound accurate until what it really means is realised.

Using Defra's latest complete testing figures (for 2009).

In England 4,899,144 tests were performed,
1 in 1,000 tests, 4,899 in those 4,899,144, will be false reactors or 'false positives',
24,924 cattle were actually condemned as reactors,
4,899 or **1 in every 5** of those cattle will have been incorrectly condemned.

In Wales 1,812,666 tests were performed,
1 in 1,000 tests, 1,812 in those 1,812,666, will be false reactors or 'false positives',
10,117 cattle were actually condemned as reactors,
1,812 cattle, or **1 in every 6** of those cattle will have been incorrectly condemned.

In Scotland 229,800 tests were performed,
1 in 1,000 tests, 229 in those 229,800, will be false reactors or 'false positives',
323 cattle were actually condemned as reactors,
229 or a staggering **2 out of every 3** of those cattle will have been incorrectly condemned.

2. False negatives.

According to Defra[8] the skin test **misses 1 in 5 cattle that it should identify as reactors.** (This is the 'sensitivity' of the test). For every four 'reactors' slaughtered in the belief that they are or will become infectious or infected, **one more remains undetected and potentially infectious in the herd or worse still moved to infect another herd** or area. If one or more reactors have been found in the herd, a further test is done 60 days later and it may then detect the missed reactors, or maybe not.

The skin test is compromised by three major shortcomings

In many countries this shortcoming is recognized and the skin test is used as a herd test. All animals in the herd are tested individually as in Britain, **but if a single reactor is found the entire herd is slaughtered and restocking is delayed.**

3. The skin test does not detect cattle that have or will have Bovine TB.

It identifies animals that have come into contact with M bovis and mounted an immune reaction - exactly what a healthy animal should do. The latent infection which remains may in some of these animals re-emerge as Bovine TB, but not in all. All are slaughtered.

Only about one third of reactors show evidence of infection at post mortem and can be listed as 'confirmed reactors'. Much of the compensation paid to farmers is for healthy cattle that were unlikely to develop Bovine TB or would have been slaughtered in the normal course of farm production long before any symptoms developed.

The testing regime:

- **Condemns thousands of cattle in error.**
- **Fails to detect a significant number of infected cattle.**
- **Looks for the wrong thing.**

Besides the shortcomings in the 'imperfect' testing regime, Bovine TB policy is having severe effects on farming. Of particular note:

Healthy cattle are being slaughtered and farmers are consequently suffering unnecessarily. If Bovine TB itself was affecting farm productivity evidence would have emerged by now. It is not easy for cattle to catch Bovine TB and clinical symptoms are rarely seen on farms.

Testing requires unfamiliar and stressful handling of cattle, compromising both animal welfare and human safety.

Compensation does not always cover the value of the animals and certainly not the consequences of movement restrictions and loss of critical breeding stock.

The devastating effect of Bovine TB is not the effect of the disease, it is the effect of the Bovine TB eradication policy. This policy has produced limited if any results and causes greater human and animal welfare problems than it relieves, at enormous cost to the taxpayer.

The policy is not only ineffective, it is far worse than the disease.

7. Rethink: there must be a better way

Whatever aspect is considered - farming profit, cost effectiveness for the taxpayer, animal welfare, human health, conservation or food security - the current policy is a resounding failure.

No business (or rational person) would continue a policy which had no good reason for existence and a 60 year history of failure.

The criteria for a successful policy would be:

- Protection of human health
- Protection of animal welfare
- Security of supply of good food from a prosperous and financially self sufficient farming industry
- Low or no cost to taxpayers
- Farms regain primary responsibility for animal welfare, product safety and quality

What options exist?

1. Continuing with the current policy even with marginal

changes cannot be considered a serious option.

2. Drastically increased severity applied to the current policy, along the lines of measures adopted in Australia and the USA, might increase effectiveness.

- Change from culling of individual animals to complete herd and contact 'depopulation' with delays on restocking.
- Increased risk based and out of area movement controls.
- More frequent testing of cattle, and use of alternative tests.
- Addressing wildlife reservoirs.

Clearly the political and financial cost of such measures would be prohibitive and attainment of 'official TB free' status would still take decades to achieve.

3. Acceptance that Bovine TB is not a significant human health risk in the UK.

- Animal health and welfare would be a matter in the first instance for individual farms, as is the case with most diseases.
- Milk would continue to be pasteurized.
- Inspection at abattoirs would continue.
- Any animal showing actual symptoms of Bovine TB would be tested and either slaughtered or isolated and treated, as is the case with most diseases.
- Farms would be free to choose to vaccinate cattle as is the case with most other diseases, or various degrees of compulsory vaccination could be introduced.
- Farms would be free to continue routine testing and acquire herd TB free status or to choose vaccinated status, in response to market demand or farm preference.

The principle objection to vaccination is that, according to Defra[12]; "Not all vaccinated animals would be protected from TB and therefore vaccination alone will not be sufficient to demonstrate disease free status without testing and allow trade in those animals". This is a disingenuous argument, as use of the skin test to demonstrate TB free status is subject to the same shortcoming.

Vaccines can be used for two complementary purposes - to protect individuals or to protect populations. No vaccine provides complete immunity to individual animals, just a measure of protection. If enough animals are vaccinated it is near impossible for an epidemic to occur, thereby protecting the population.

8. Conclusion

We are suffering under a policy that has demonstrably failed, at massive cost to farmers, to the taxpayer, and to animal welfare. At best it will take several more decades of cattle testing and slaughter to achieve 'official TB free' status.

No sound reason exists for the 'test and cull' policy.

A better way must be found.

When, as is the case with Bovine TB, no overriding public or animal welfare interest exists farmers are best left to take responsibility for their own animals and business decisions.

Given the lack of real practical human health risk, we propose that option 3 above should be adopted.

- **Animal health and welfare would be a matter in the first instance for individual farms, as is the case with most diseases.**
- **Milk would continue to be pasteurized.**
- **Inspection at abattoirs would continue.**
- **Any animal showing actual symptoms of Bovine TB would be tested and either slaughtered or isolated and treated, as is the case with most diseases.**
- **Farms would be free to choose to vaccinate cattle as is the case with most other diseases, or various degrees of compulsory vaccination could be introduced.**
- **Farms would be free to continue routine testing and acquire herd TB free status or to choose vaccinated status, in response to market demand or farm preference.**
- **The saving to taxpayers would be in the order of £100 million every year. The saving to farmers in stress, anxiety and loss of production would be beyond calculation.**

9. References

1. ‘Tuberculosis in the UK: Annual report on tuberculosis surveillance in the UK’, 2010. London: Health Protection Agency Centre for Infections, October 2010, pages 7 and 17. Professor Paul R Torgerson (co-author of ‘Public health and bovine tuberculosis: what’s all the fuss about?’) tells us that virtually all these cases are either in old people who probably have reactivated old lesions that were acquired before there was compulsorily milk pasteurization or immigrants who were infected overseas. Thus transmission to humans in the UK is virtually zero at the present time.
2. ‘Cattle movements and bovine tuberculosis in Great Britain’, Gilbert et al, ‘Nature’ 26 May 2005: www.nature.com/nature/journal/v435/n7041/abs/nature03548.html
   Also refer to comments by Tony Edwards, then Director of Animal Health Wales, Western Mail, 23 June 2009
3. ‘Survey of Mycobacterium bovis infection in badgers found dead in Wales’, January 2007. Veterinary Laboratories Agency, Executive Summary, para 1.7.
4. ‘Options for vaccinating cattle against bovine tuberculosis’, Defra, para 2.1.2, page 10.
5. Freedom of information request on cattle export figures dated 9/2/11 and 10/2/11 from Gardiner, Joanne (FFG-EKBES, Defra).
6. EU Directive 78/52/EEC of 13 December 1977 Chapter III Article 13b.
   EU Regulation (EC) No 853/2004 of 29 April 2004 Section IX Chapter I Para 4. EU Directive 64/432/EEC.
7. EU Community Animal Health Policy: www.ec.europa.eu/food/animal/diseases/strategy/whatis_cahp_en.htm
8. ‘Dealing with Bovine TB in your herd’, Defra May 2008, Page 13.
9. ‘Bovine Tuberculosis in England: Towards Eradication, Final Report of the Bovine TB Advisory Group’, April 2009, Page 4.
10. http://archive.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/tb/stats/county.htm (taking 3 year averages for 1998-2000 and 2007-2009).
11. ‘Options for vaccinating cattle against bovine tuberculosis’, Defra, para 22.2.16, page 13.
12. Defra: ‘Options for vaccinating cattle against bovine tuberculosis’, para E10, page 5.

10. Further information

‘Public health and bovine tuberculosis: what’s all the fuss about?’ by Professors Paul R. Torgerson and David J. Torgerson. In their report they propose that bTB control in cattle is irrelevant as a public health policy. They provide evidence to confirm that cattle-to-human transmission is negligible. They believe there is little evidence for a positive cost benefit in terms of animal health of bTB control. Such evidence is required; otherwise, there is little justification for the large sums of public money spent on bTB control in the UK.

‘Options for vaccinating cattle against bovine tuberculosis’ by the Veterinary Team bTB Programme, Food and Farming Group states that cattle vaccination has potential benefits to reduce prevalence, incidence and spread of bTB in the cattle population.

‘Economic Impact Assessment of Bovine Tuberculosis in the South West of England ‘ dated September 2010 by Dr Matt Lobley, Allan Butler, and Michael Winter. The main emphasis of the report is on the economic impact of bTB.

A website that questions and debates the existing policy: www.bovinetb.co.uk

‘Stress and Loss’ by the Farm Crisis Network outlines the impact of bovine TB policy on 68 farming families in ‘hot spot’ areas: www.farmcrisisnetwork.co.uk/latestnews/stress-and-loss-a-report-on-the-impact-of-bovine-tb-on-farming-families

Case studies that reveal the negative consequences of the existing eradication programme and flaws of the skin and blood tests currently used: www.bovinetb.co.uk/articles.php?category_id=32

Details of Defra’s current bTB policy: http://ww2.defra.gov.uk/food-farm/animals/diseases/tb

‘Government Strategic Framework’ for the sustainable control of bovine tuberculosis (bTB) in Great Britain, 2005/2015’, published in 2005 sets out a ten-year Government strategic framework for the control of bTB in cattle and farmed deer within Great Britain.

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