Research Briefing

Bovine TB in Wales: governance and risk

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National Assembly for Wales
Research Service

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1. Introduction

The National Assembly for Wales has established a fellowship scheme to enable academics at a senior career level (post-PhD) to spend time working with Assembly staff on a specific research project in areas of mutual benefit to the academic and the National Assembly.

Dr Gareth Enticott, a Reader in the School of Geography and Planning, Cardiff University has undertaken a fellowship involving primary and secondary research on Bovine TB (Bovine Tuberculosis) in Wales, in his capacity as an employee of Cardiff University. The project has examined: the social aspects of Bovine TB disease management in Wales; models of risk based trading and the governance approaches used successfully in New Zealand and Australia and their applicability to Wales.

The outputs from this research work are presented in this Research Service publication, and another entitled 'Brexit implications for Bovine TB in Wales'. Together, they are intended to support Assembly Members from all political parties to be better informed about Bovine TB.

2. Methodology

This research briefing draws on previous research conducted by the Fellow between 2012-2015 that examined the history and governance of Bovine TB in New Zealand. The research involved analysis of government archives, interviews with key policy, veterinary and farming stakeholders, and interviews with farmers in high and low TB risk areas of New Zealand.

3. Tackling Bovine TB in Wales

Due to its significant impact on animal welfare, farmer welfare and farm business viability, tackling Bovine TB is a priority for the agriculture industry in Wales. The Welsh Government **estimates** that for long standing Bovine TB breakdowns, some of which have seen herds under restrictions for 16 years or more, the cost of testing the herds and compensation for cattle slaughtered is, on average, £179,000 per herd.

Bovine TB and its effects

Bovine TB is an infectious and chronic disease caused by *Mycobacterium bovis* (*M. bovis*) and usually affects the lungs and lymph nodes of cattle. In most cases infected cattle are able to transmit the disease before they show any symptoms, which may be many months after they are infected. Controlling Bovine TB therefore depends on detecting and eliminating infected cattle as early as possible. While cattle and badgers are the principle hosts of the disease in the UK, camelids, deer, goats and domestic animals are also susceptible.

The **latest Bovine TB statistics for Wales** show that in the 12 months to August 2017, 9,808 cattle were slaughtered as a result of the disease, a 2% increase on the previous 12 months. In the same period, there were 762 new herd incidents (compared to 707 in the previous 12 months, an 8% increase). The Welsh Government **report** that the number of new TB incidents is down by 40% since 2009, the lowest level in 12 years.

Policies and strategies adopted by the Welsh Government

The Welsh Government has to date adopted a **Bovine TB Eradication Programme** made up of a number of different elements. These include: annual testing of cattle herds; a wide range of cattle control measures such as pre-movement testing; movement restrictions on infected herds;

slaughtering infected animals; and piloting badger vaccination in an **Intensive Action Area** (suspended early due to problems with the global supply of the vaccine).

In 2011 the Welsh Government passed ***The Badger (Control Order) (Wales) 2011***. This order gave the Welsh Government powers to undertake, if it so wished, a badger cull within the Intensive Action Area. However, this order was subsequently **revoked in 2012** by John Griffiths, the then Minister for Environment and Sustainable Development, following his decision to pursue a badger vaccination policy instead. If the Welsh Government wishes in future to pursue a cull in the Intensive Action Area or in other parts of Wales, it will need to secure support for a new order through the Assembly. To inform policy, the Welsh Government is also undertaking a dead badger survey to better understand the level of the disease in the badger population in Wales and the relationship between TB infection in badgers and cattle.

Refreshed Welsh Government Programme

In October 2016 the Welsh Government launched a **consultation** 'A Refreshed TB Eradication Strategy' (closed January 2017). A key change is the introduction of a regionalised approach based on Bovine TB incidence. This sees Wales split into three geographical Bovine TB incidence categories - high, intermediate and low Bovine TB areas. The consultation advised that for each of these areas different measures would be used in a targeted approach. The range of measures proposed in the consultation included:

- surveillance testing of cattle herds (annually and six monthly – depending on area);
- pre-movement testing;
- movement restrictions on infected herds;
- strengthened biosecurity on farms;
- voluntary risk-based trading (moving to mandatory if necessary);
- slaughtering infected animals;
- reducing compensation amounts; and
- badger vaccination when vaccine becomes available and, under certain circumstances,
    - the removal of infected badgers on chronic breakdown farms to break the badger to cattle transmission route.

Following the consultation a **Summary of Responses** was published on February 2017. The then Cabinet Secretary for Environment and Rural Affairs, now Energy, Planning and Rural Affairs, Lesley Griffiths, made a Bovine TB **oral statement on 20 June 2017**.

A refreshed TB Eradication Programme and the associated delivery plan have now been published and are available on the Welsh Government's **website.** A **FAQs document (PDF 501KB)** provides further details on many of the new arrangements. The refreshed Bovine TB Eradication Programme commenced on 1 October 2017. On 3 October 2017 the Cabinet Secretary made a further Bovine TB **statement in Plenary** on the programme. A **written statement** was issued on 12 December 2017 setting out a national eradication target for Wales to be Officially TB Free (OTF) between 2036 and 2041.

National Assembly for Wales inquiry

In 2017, the Climate Change, Environment and Rural Affairs Committee undertook an inquiry to understand the scientific evidence and wider issues around addressing Bovine TB. It published its **inquiry report** in May 2017. A Research Service **In Brief blog** provides an overview of the report. In summary, the report states that in light of the evidence heard, the Committee endorsed the Welsh Government's proposed refreshed approach, set within a new regionalised framework. The programme is intended to be comprehensive addressing all aspects of disease transmission, underpinned by a wide range of targeted measures.

The Committee received a **response from the Cabinet Secretary** on 17 May 2017. Ten of the twelve recommendations were accepted and two accepted in principle.

4. Managing trading risk

Limiting the spread of infection is central to disease management. As a contagious disease, Bovine TB has a number of transmission routes, including cattle to cattle and wildlife to cattle. It can also be spread through infected slurry and contaminated farm equipment. The movement of cattle can transmit infection into new herds, as Bovine TB may go undetected in bought-in cattle despite TB testing. Bovine TB risk is not uniform in Wales, as such cattle movement associated with purchasing involves risk.

Risk Based Trading

Risk Based Trading (RBT) is a method of regulating trade between farms to minimise the risk of translocating disease. Methods of RBT may vary: they can be statutory or rely on forms of self-governance that encourage better 'biosecurity citizenship' amongst farmers. According to a 2013 **report (PDF 347KB)** prepared by an advisory TB Risk Based Trading Group for Department for Environment and Rural Affairs (Defra) Ministers in 2012, RBT schemes seek to shape farmers' livestock purchasing practices by providing accurate information on disease risks in order to:

> *encourage farmers to consider the relative disease risk of animals that they are buying, empower them to make better informed cattle trading decisions, and take greater responsibility for managing the [disease] risk of their herd as part of wider efforts to stop the spread of [disease]*

Whilst statutory RBT schemes may simply ban the sale and movement of animals from one place to another, RBTs can also seek to encourage farmers to make the right decision by ascribing values and incentives to farming practices. In doing so, RBT follows other principles of behaviour change by using social norms, making decisions easy, and using economic penalties. For example, scoring the level of disease risk for each farm identifies the 'best' and 'worst' performers, which can provide economic benefits to the highest performers whilst also providing social incentives for low performers to improve their disease management practices.

Wales

In Wales, statutory regulations and voluntary measures affect the movement of cattle. Statutory controls ban the sale of cattle from farms under Bovine TB restrictions, unless cattle are moving direct to slaughter or to an Approved or Licenced Finishing Unit (in England). There are no statutory restrictions for purchasing cattle from officially TB free holdings, however long they have been clear from TB. However, all cattle moved must have passed a pre-movement test. In Wales, the pre-

movement test may not constitute the last herd test where that herd has recently had a TB incident. If cattle are moved to the low risk area of Wales, they must also be post-movement tested.

Beyond these statutory measures, a range of voluntary schemes (listed below) have attempted to encourage 'informed purchasing' amongst Welsh Farmers. Evidence of their effect on cattle trading patterns is limited. The Welsh Government intends for these and other measures to become mandatory in future.

Schemes

The Cattle Health Certification Standards (**CHeCS**) were introduced on 28 November 2016 in England and Wales. Members of the scheme receive a risk score ranging from 0 – 10 to indicate the potential Bovine TB risks from purchasing cattle from these farms (see Table 1). The scoring system is based on research which suggests the risk of Bovine TB declines over time (Bovine TB Risk Based Trading Group, 2013). Members of the CheCS scheme must also isolate and conduct post-movement tests for purchased cattle, and ensure field boundaries are secure.

Membership of the CheCS scheme can confer benefits. In low risk areas of Wales, members are not required to conduct post-movement tests if purchased animals come from CheCS accredited herds with a risk score of 10. In England, Defra have proposed that CheCS herds in high risk areas with a risk score of between 5-10 could test less frequently than every 6 months.

Table 1: Risk scores under the Cattle Health Certification Standards (CHeCS) scheme

CheCs Bovine TB Herd Accreditation Scheme Risk Scores	
Risk Score	Description
0	Less than 1 year since the last bTB breakdown
1-9	1-9 years since last bTB breakdown
10	10 years or more since last bTB breakdown

Source: **CHeCS**

Livestock markets

In 2015, the Welsh Government provided grant funding to allow livestock markets to upgrade information facilities. The 'Informed Purchasing' grant provided 50% of the eligible costs (up to a maximum of £2,500) for equipment such as display boards and screens. Ten markets (four in north Wales and six in south/mid Wales) have received funding. Markets were encouraged to show information relating to the TB status of animals for sale, including: date of pre-movement test; date of the last herd test; date the herd became TB free (if applicable); and membership of animal health assurance schemes (where applicable).

ibTB mapping tool

Since 2015, information on farms that are either currently under Bovine TB restrictions, or have been, has been published on a publicly available **website ibTB**. ibTB is an online interactive mapping tool that shows all farms in England and Wales that have had a TB incident since 2013, whether the incident is ongoing or resolved. Farms can be searched for using a postcode or each farm's County

Parish Holding Herd (CPHH) number. Every incident is shown on a map allowing users to see other incidence on neighbouring farms.

Australia

A statutory RBT scheme was part of the successful Bovine TB eradication scheme that ran in Australia between 1970-1997. The scheme classified disease risk at two spatial scales: at the regional level and the herd level. Areas were classified as: control, eradication, provisionally free, impending free (from 1986) and free. Herds were classified as: infected, restricted, provisionally clear, Confirmed Free 1 (no evidence of infection in last year), Confirmed Free 2 (no evidence of infection in last 8 years), and Confirmed Free 3 (no evidence of infection in more than 8 years). Regulations specified which herds in each area were free to move to which regions. For example, no movements were permitted from suspect or provisionally clear herds in provisionally free areas to impending free areas. Confirmed Free herds in free areas faced no restrictions moving to impending free areas (**More et al., 2015**).

New Zealand

In New Zealand, cattle movements are governed largely through a system of self-regulatory controls operating at the herd level rather than regional scales. Regional risk controls do exist: cattle within movement control areas must be pre-movement tested, but there are no other regional movement restrictions between areas of high and low Bovine TB.

Instead, a herd level scheme attempts to influence cattle movements using social incentives and norms. All cattle herds receive a ranking – known as the 'C Score' indicating the number of years they have been clear of Bovine TB (e.g. C7 is 7 years free) up to a maximum of 10 years. Infected herds are ranked in a similar way, for example, I2 is a herd infected for 2 years. The ranking confers economic and social status upon farmers: C10 farmers may be seen as 'good farmers' and their status can attract a premium at market. Notionally, the scheme has penalties to disincentivise 'risky' cattle purchases. If farmers replace more than 25% of their herds with lower status stock, then their C status should revert to that of the cattle bought in. For example, were a C10 farm to buy enough cattle from a C5 herd, it would adopt the lower status classification. However, this system relies on farmer self-governance and there is no monitoring of the effect of cattle purchasing on farmers' C status.

5. Factors affecting the creation of Risk Based Trading schemes

Governance

The development of systems of RBT in Australia and New Zealand is connected to broader changes in the governance of Bovine TB. In this context, governance refers to the degree of participation and control within policy making of key industry stakeholders. Participation includes direct involvement in policy making, financial contributions from all beneficiaries of Bovine TB eradication programmes (i.e. farmers and government), and stakeholder engagement at local levels. The advantages of these systems of governance are seen to lie in their ability to help generate compliance and 'ownership' amongst farmers, and draw on 'field-level expertise' of farmers and vets. Whilst replicating elements of governance systems that exist in Australia and New Zealand has become a key part of eradication programmes in England and Wales, it is important to understand how these systems were created when considering both their suitability and potential efficacy.

Australia

Historical accounts of the development of governance systems in Australia to deal with Bovine TB are described by Lehane (1996) and **More *et al.* (2015)**. These reviews argue that industry involvement and ownership of the scheme were vital to its success. Until 1984, industry played a relatively minor role in the governance of Bovine TB in Australia. The eradication programme was part of a coordinated national approach that sought to eradicate both brucellosis and Bovine TB – hence the title Brucelosis and Tuberculosis Eradication Campaign (BTEC). The history of BTEC, its successes and challenges have been reviewed in a range of academic and policy documents. Following concerns amongst farmers about the effects of mass destocking of infected herds, farmers groups played a more vocal role, sitting on national, state and regional advisory committees. Levies to pay for Bovine TB eradication activities had been collected from Australian farmers since the 1970s, but it was not until 1987 that there was agreement that 50% of funding would come from the cattle industry. Importantly, these experiences have shaped subsequent approaches to managing animal disease in Australia such as the creation of **Animal Health Australia**.

New Zealand

In New Zealand, the creation of the RBT scheme occurred alongside and as part of changes to the governance of Bovine TB eradication. In New Zealand, Bovine TB is managed by Operational Solutions for Primary Industries (**OSPRI**), formerly known as the Animal Health Board (AHB). The AHB was established as an incorporated society in 1998, following the passing of New Zealand's *Biosecurity Act 1993* (**Livingstone et al., 2015**). The AHB took the role of a Pest Management Agency, responsible for writing and delivering the National Pest Management Strategy for TB (**Hutchings et al., 2013**). The creation of the AHB occurred at a time of intense social and economic upheaval during the 1980s. Funding for disease control reduced, whilst disease control functions usually performed by the government were privatised. In recognising the impact this changing environment could have on disease incidence, farmers, vets and policy makers worked together to provide the impetus for creating a new system of governance. Farmers contributed financially through levies, and by sitting on stakeholder boards at regional and national level to design and implement policy effectively.

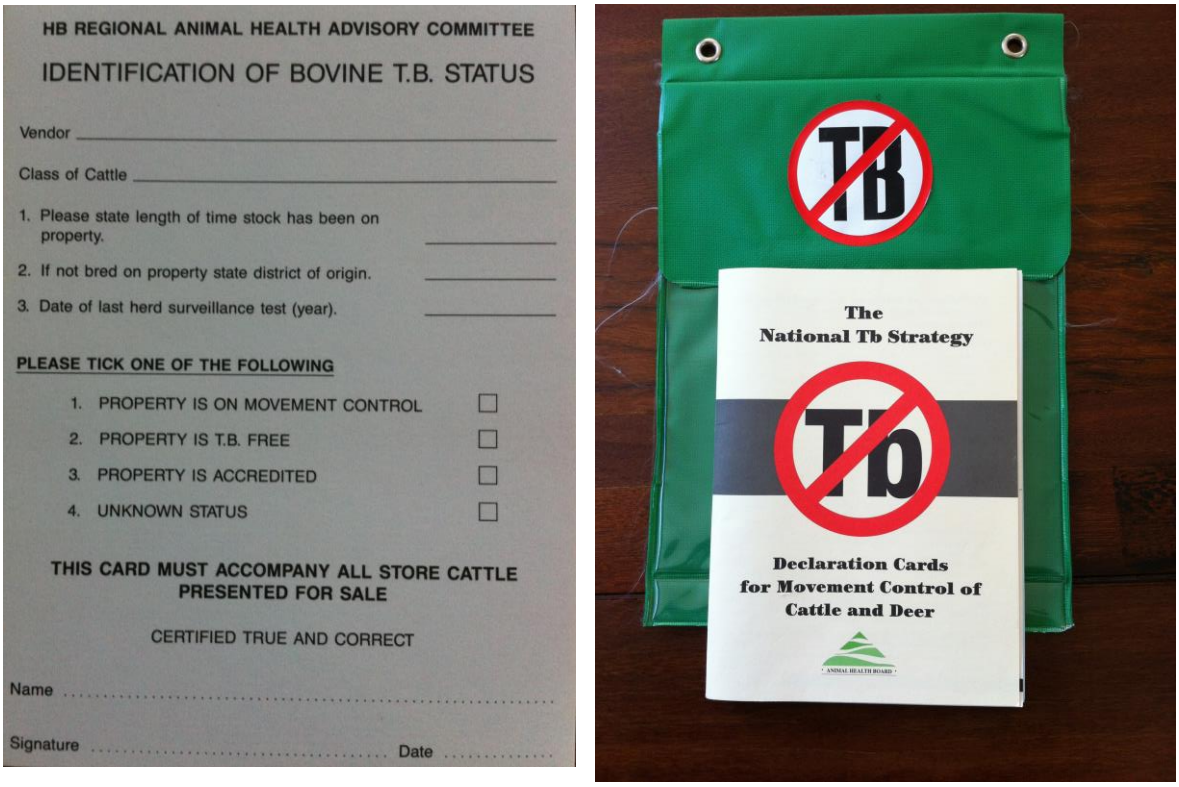
Leadership

In both Australia and New Zealand, key individuals played an important role in re-designing governance systems and creating RBT systems. In both countries, there is evidence of farming leaders and vets intervening at crucial moments to swing the ownership of Bovine TB policy towards farmers.

In New Zealand, the system of RBT was initially created by a local auctioneer and farmers who were part of the Regional Animal Health Advisory Committee (RAHAC) in the East Coast / Hawkes Bay region. RAHACs were initially established in the 1960's as a means of farmer engagement. The group was led by Ross Bramwell, a local auctioneer, who together with other local farmers, had become concerned about the number of cattle from regions of high Bovine TB incidence, such as the Wairarapa, being sold in Hawke's Bay and translocating the disease. In 1991, the Committee began to insist that any cattle on sale in their sale yards would have to display Animal Status Declaration (ASDs) cards explaining the herds' Bovine TB history.

Soon after these measures were implemented by the RAHAC, the system of ASD cards was adopted in the rest of New Zealand and became the basis for the 'C Score' status scheme. Farmers from areas with high levels of Bovine TB were initially shocked and angered by the requirements. Despite the risks to the sale yard businesses, and criticism from farmers less concerned about the disease status

of their cattle they were buying and selling, the RAHAC leadership persevered with system, supported by other local farmers who saw the value in reducing Bovine TB through RBT.



HB REGIONAL ANIMAL HEALTH ADVISORY COMMITTEE

IDENTIFICATION OF BOVINE T.B. STATUS

Vendor _____

Class of Cattle _____

1. Please state length of time stock has been on property. _____
2. If not bred on property state district of origin. _____
3. Date of last herd surveillance test (year). _____

PLEASE TICK ONE OF THE FOLLOWING

1. PROPERTY IS ON MOVEMENT CONTROL ☐
2. PROPERTY IS T.B. FREE ☐
3. PROPERTY IS ACCREDITED ☐
4. UNKNOWN STATUS ☐

THIS CARD MUST ACCOMPANY ALL STORE CATTLE PRESENTED FOR SALE

CERTIFIED TRUE AND CORRECT

Name .....

Signature ..... Date .....

Images above show early examples of RBT for Bovine TB in New Zealand. The original ASD cards developed in Hawkes Bay are shown on the left. Later, they were adopted by the AHB and inserted into pouches for display at livestock markets. Source: Fellows own.

Co-design

In New Zealand, the RBT scheme was designed for and by farmers which was crucial in its acceptance at a local level. When the RBT scheme was adopted by the AHB and transformed into the current 'C Score' status system, farmers remained crucial to its design. Epidemiologists in the AHB suggested changing the system to a two point classification based on their data of disease recurrence: herds whose last incident was greater than 4-5 years would be called low risk and the others high risk. Farmers, however, preferred the 1-10 system seeing it as more intuitive and easy for farmers to make sense of. In the spirit of partnership within which the AHB was created, farmers' views took precedence and the 1-10 system was adopted nationally.

Limitations of voluntary schemes

Evidence

Evidence of the contribution of voluntary methods of RBT is hard to find. In New Zealand, there are no formal monitoring or evaluations of the 'C Score' status scheme. Recent modelling of cattle movements in New Zealand suggests that regional risk designations have shaped cattle movements, but that a significant proportion of cattle movements reflect a range of factors that go beyond the rational decision of choosing to buy cattle with the least disease risk. Instead, factors such as established supplier-buyer relationships, the role of trust and use of trusted advisors, as well as individual perceptions towards disease risk, may play a significant role in shaping disease decisions (Hidano et al., 2016).

Farmers' Understandings of Disease

Social research shows that farmers build up their own picture of the epidemiology of Bovine TB from their own experiences, and from accounts of other farmers' problems that are shared within social networks. These accounts of disease often vary from official or scientific perspectives, and lead to the non-adoption of biosecurity advice. These lay understandings of Bovine TB also impact on the use of voluntary systems of RBT. In New Zealand, studies of the effect of 'C Score' status show whilst the score is understood by all farmers, its relevance varies depending on context:

01. The quality of cattle is important in purchasing decisions. These qualities may vary regionally and be unrelated to disease.

02. Farmers in high risk areas believe that Bovine TB is a matter of luck and chance rather than good farming practices. This fatalism meant that the 'C Score' status provided a limited guide to the safety of purchased cattle.

03. When the consequences of Bovine TB have no significant impact on the farm business, and/or farmers are not motivated by expansion, improving the 'C Score' status may be of limited value.

Evaluation of schemes in England and Wales

Whilst membership of schemes such as CheCs should be relatively easy to track, less is known about other voluntary methods of informed purchasing. For example, whilst research has shown that the ibTB website is highly usable, the extent and reasons for its use are unknown. It is also not clear *who* is using ibTB. Whilst usage currently stands at around 100 hits per day, there is also evidence that ibTB is used by those in anti-badger culling movement. A system of user registration could improve ibTB in the following ways:

- Allow a more accurate assessment of usage by farmers;
- Provide additional data (such as farms without Bovine TB; details on the type of breakdown; Bovine TB risk scores); and
- Provide targeted communication about Bovine TB in farmers' locality (such as text alerts) and/or relevant biosecurity/best practice advice.

6. Bovine TB governance in Wales

Existing arrangements

The **Bovine TB Eradication Programme** in Wales is run by the Welsh Government and delivered in partnership with the Animal and Plant Health Agency (APHA) and veterinary delivery partners who conduct TB testing and farm visits. The Bovine TB Eradication Programme Board oversees the programme, and is comprised of a range of stakeholders associated with farming. This arrangement differs to that in New Zealand and Australia where the eradication programme is paid for jointly by farmers and government, and farming industry representatives have decision making powers. There are three regional eradication delivery boards in Wales (west, south/mid and north) which are comprised of local farmers, vets and other agricultural stakeholders. The boards have limited powers to act autonomously, but have proposed local trials to test new approaches to managing Bovine TB.

Key questions

Research conducted for this fellowship suggests a number of key questions:

04. What decisions can and should stakeholders in Wales make?

Reforms to the governance of disease management are a consistent theme in successful eradication programmes in Australia and New Zealand. In each of these examples, policy makers ceded ground to the farming industry leading to the creation of new approaches to managing TB. For the governance of TB in Wales, this raises the question of to what extent this style of devolved decision making is desirable or not, and what decisions should stakeholders be allowed to make?

05. What is the appetite for taking ownership of Bovine TB in Wales amongst the farming industry?

The experiences of Australia and New Zealand also highlight the extent to which members of the farming industry forced changes to the way the government managed Bovine TB. Without this kind of appetite for change and leadership amongst the farming industry, none of the successful interventions – such as the development of Risk Based Trading – would have been achieved. The question for Wales is to what extent have stakeholders demonstrated leadership in management of the disease, or do they prefer government to solve the problem of Bovine TB?

06. Can voluntary Risk Based Trading be improved in Wales?

The Welsh Government has signalled an intention to move from a voluntary to a mandatory system of risk based trading. However, it is possible to develop and assess other self-regulatory mechanisms for RBT. These could include reporting on 'risky' cattle movements at a regional level to help promote a culture of biosecurity. Similarly, categorising all farms using the "years free of TB" metric as standard practice can help those farms in high risk areas without TB, and aid farmers to visualise the risk of cattle they are looking to buy. Finally, existing mechanisms such as ibTB could be enhanced to provide personalised information to users.

07. What evidence is required for a mandatory Risk Based Trading scheme?

As noted above, changes in Bovine TB management have, elsewhere, been driven by the farming industry. The rationale for moving to a mandatory system will need to be evidenced and the likely benefits and impacts assessed. This should include, for example, analysing the reasons why voluntary schemes fail, and attempts to involve farming representatives in the design of a RBT scheme to ensure they have ownership of it.

7. Key Sources

Risk Based Trading in the UK

CheCs

ibTB

TB Hub

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