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HEALTH & CONSUMERS DIRECTORATE-GENERAL
Unit 04 - Veterinary Control Programmes

SANCO/3751/2008

*Programmes for the eradication, control and monitoring of certain
animal diseases and zoonoses*

Eradication programme of Bovine Brucellosis

Approved* for 2009 by Commission Decision 2008/897/EC

United Kingdom

* in accordance with Commission Decision 90/424/EEC

ANNEX II

Standard requirements for the submission of programmes of monitoring, eradication and control of animal diseases co-financed by the Community

1. Identification of the programme

Member State: *United Kingdom (Northern Ireland)*

Disease(s)¹: *Bovine Brucellosis*

Year of implementation: *2009*

Reference of this document: *BR Submission 2009*

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Date sent to the Commission:

¹ One document per disease is used unless all measures of the programme on the target population are used for the monitoring, the control and eradication of different diseases.

2. Historical data on the epidemiological evolution of the disease(s)²:

1.1.1. *Surveillance system:*

The Department of Agriculture and Rural Development for Northern Ireland carries out a programme of blood and milk testing of all herds containing breeding stock. Routine Brucellosis blood sampling is carried out on cattle herds in Northern Ireland on an annual basis, with the exception of dairy herds in 7 lower incidence DVOs, which are routinely blood sampled on a biennial basis (with associated monthly bulk milk ELISA testing). The blood samples are tested by means of a serum agglutination test (SAT) in accordance with Annex C of Directive 64/432/EEC. If any SAT reading > 30 iu is detected at this test, the sample is again tested by means of an SAT (EDTA) test and complement fixation test (CFT). Any animal giving an SAT test result of ≥ 30 i.u. of agglutination per ml or any CFT reading <20 iu is classified as an inconclusive reactor and is required to be isolated and retested. Older cull cattle being slaughtered through the Older Cattle Disposal Scheme (OCDS) are routinely blood sampled. In addition, monthly bulk milk samples, which are collected by the dairies, are tested at the central government laboratory using an ELISA kit. Premovement testing of BR eligible cattle was introduced in December 2004.

1.1.2. *Notification of Abortions:*

Herd keepers and veterinary surgeons are required under the Brucellosis Control Order (Northern Ireland) 2004 to notify a Divisional Veterinary Office if any bovine animal has had an abortion (This 2004 Control Order replaced the 1972 Control Order on 1st October, 2004) A restriction notice is issued for these animals, prohibiting their movement off the premises and requiring them to be isolated. The animals are tested by the DARD Veterinary Service using both SAT and CFT until a negative test at 21 days post calving is obtained. During 2007, 2,802 cattle were blood sampled following the reporting of an abortion.

1.1.3. *Vaccination policy:*

Vaccination of animals is not allowed.

1.1.4. *Measures in case of positive findings:*

Herd restrictions, which stop the movement of animals onto and off the premises, except under the authority of a licence issued by the Department, are imposed once a reactor is identified. The reactor is required to be kept in isolation until slaughtered.

² A concise description is given with data on the target population (species, number of herds and animals present and under the programme), the main measures (testing, testing and slaughter, testing and killing, qualification of herds and animals, vaccination ...) and the main results (incidence, prevalence, qualification of herds and animals). The information is given according distinct periods if the measures were substantially modified. The information is documented by relevant summary epidemiological tables, graphs or maps.

When the presence of *Brucella abortus* is confirmed by culture of tissue samples taken at point of slaughter either:

- all breeding and potential breeding animals (reactors, infected and contact) are valued and slaughtered; or
- the breeding animals in the herd are subject to routine testing.

The OBF status of the herd is not restored until at least two clear herd tests have been completed, the last test being at least 21 days after any animals pregnant at the time of the outbreak have calved. In practice, this may mean the restriction and testing of all breeding cattle in a herd through an entire calving cycle.

The amount of compensation varies depending on whether the animal is a reactor or a contact. In the case of reactors, compensation is paid to a limit of 75% of the average market value subject to a ceiling based on market returns. In the case of contact animals, 100% of the value is paid with no upper limit. When an animal is intended to be slaughtered, the amount of compensation is based on the market value of the animal. The market value is an amount agreed between the competent authority and the owner of the animal. Where agreement cannot be reached the owner has the option to nominate an independent valuer to value the animal. Where either the competent authority or the owner is dissatisfied with the determination of market value they may submit an appeal to an independent panel. If the amount of salvage received by DARD for the carcass exceeds the compensation payable under the above rules then the difference is paid to the herd keeper.

Investigations into contact with contiguous herds are undertaken to assess the risk of spread of infection. Herds of origin, transit herds or other herds considered to be at risk are tested. Forward tracing is carried out and animals which have left the infected herd since the last negative herd test, are tested. All contiguous herds are tested as well as herds with cattle movements to and from the affected herd. Before restrictions can be lifted, the premises has to be cleansed and disinfected with an approved disinfectant and subjected to veterinary inspection.

1.1.5. Historical data on the epidemiological evolution of the disease:

There are 1.6 million cattle in Northern Ireland, distributed among 28 000 active herds. Dairy cows/heifers comprise 22% of the national herd while beef cows/heifers account for 19%. Based on cattle TB tested in herds, the mean herd size has increased from 56 cattle in 1990 to 90 in 2006, an increase of 38%. However, the data are strongly skewed to the right and the median was 37 for all herd tests in 2006. Over one-half of herds (59%) in Northern Ireland have fewer than 50 cattle.

Herd and cattle density is highest in the south and west, with the highest concentration in Counties Armagh and Down (Figure 1). Conversely, herds in the north and east tend to be larger than those in the south or west.

For veterinary administrative purposes, the province is divided into 10 regions, each with a divisional veterinary office (Figure 2). The regions are sub-divided into "patches", each managed by a veterinary officer (VO) and team of technical officers. A centralised animal

health database ("APHIS"), incorporating an animal movement and test management system is used for all aspects of Brucellosis and TB testing. The former is used to administer

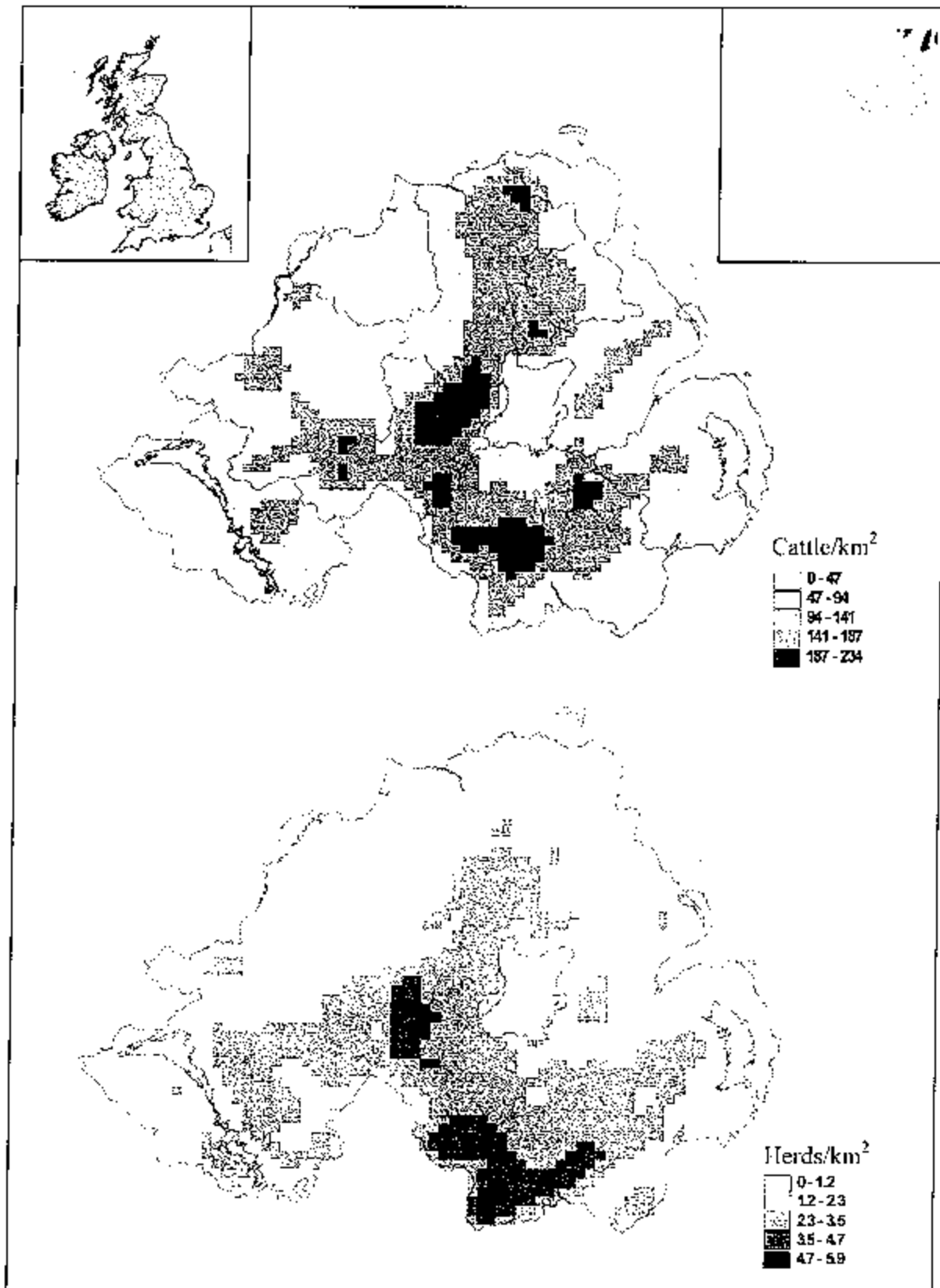


Figure 1. Cattle and herd densities, 1998 to 2003.

between-herd movement of cattle, captured in real-time using a licensing system and terminals located in markets and abattoirs. The latter facilitates management of herd-level and animal-level tests, with results recorded at animal level.

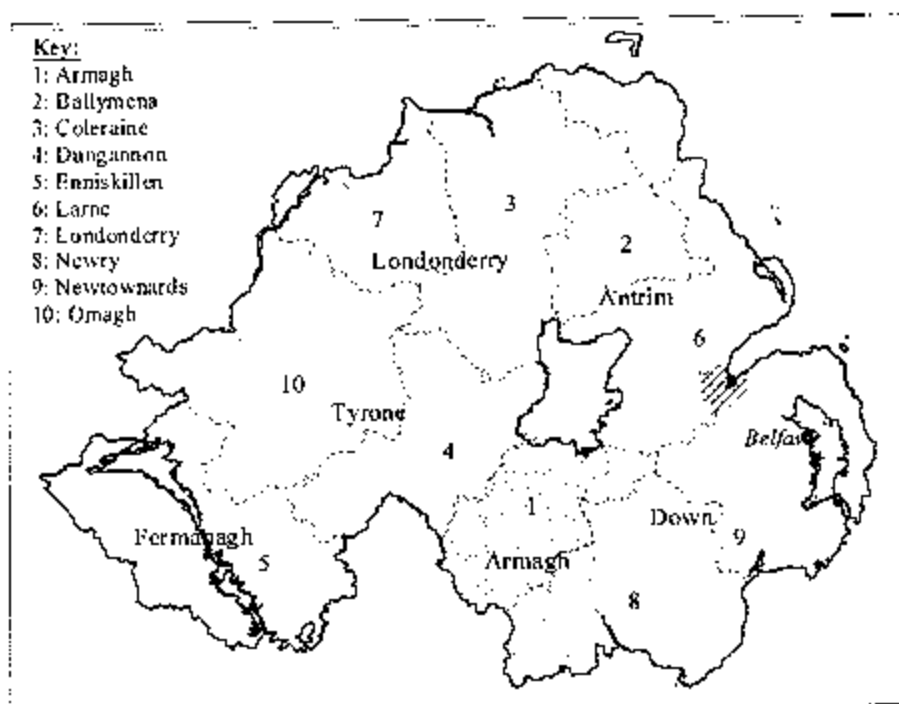


Figure 2. Counties (coloured and annotated) and Divisional Veterinary Office regions (numbered) in Northern Ireland.

Screening for Brucellosis comprises serological testing of eligible cattle (hereafter referred to as on-farm sampling), iELISA testing of bulk milk tank samples from dairy herds and sampling at slaughter of all cattle older than 30 months (recently replaced in part by the Older Cattle Disposal Scheme due to changes in the regulations). Serological samples are screened using the microtitre tray Serum Agglutination Test (MSAT) and non-negative results confirmed with the Complement Fixation Test (CFT) with the iELISA used in certain circumstances.

During the period 1995 to 2001, the mean annual number of animals tested for brucellosis was 568,000 but this increased to an annual mean of almost 1 million (979,000) for the last two years (Figure 3). This was due to the introduction of monthly bulk milk testing and also annual testing of herds that are not purely dairy herds.

Monthly bulk milk sampling commenced in 2001 and all dairy herds were included in the screening programme within the following year (over 39,000 milk samples in 2006). Serological screening at slaughter of cattle older than 30 months also commenced in 2001 (under an Over Thirty Months Scheme). With the recent change in regulations allowing older cattle to enter the food chain, this scheme was replaced by an Older Cattle Disposal Scheme which has decreased the numbers being monitored for brucellosis by this surveillance route (20,568 sampled in 2006).

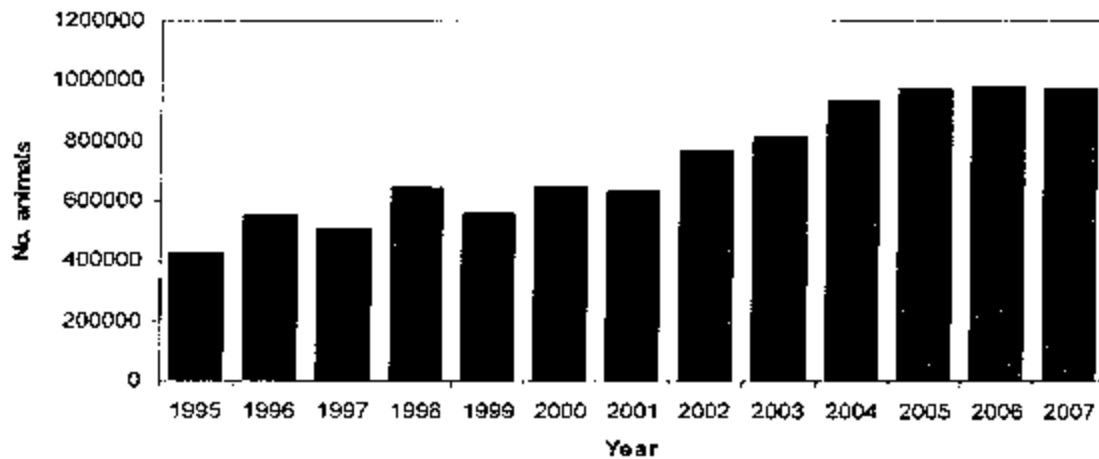


Figure 3: Annual number of animals tested for brucellosis (blood or milk samples)

Bovine brucellosis was largely eradicated from N. Ireland by the 1980s but three primary outbreaks in the late 1990s, associated with cross-border activity, resulted in significant recrudescence. Herd and animal incidences increased until 2002 before declining (Figure 4). There was an apparent reduction in incidence in 2001 but this arose from significant reductions in testing that year, associated with a foot and mouth disease epidemic. In 2005, herd incidence increased due to a significant cluster of breakdowns associated with an outbreak in County Armagh, and to increased use of parallel testing and severe interpretation of serological tests (see later).

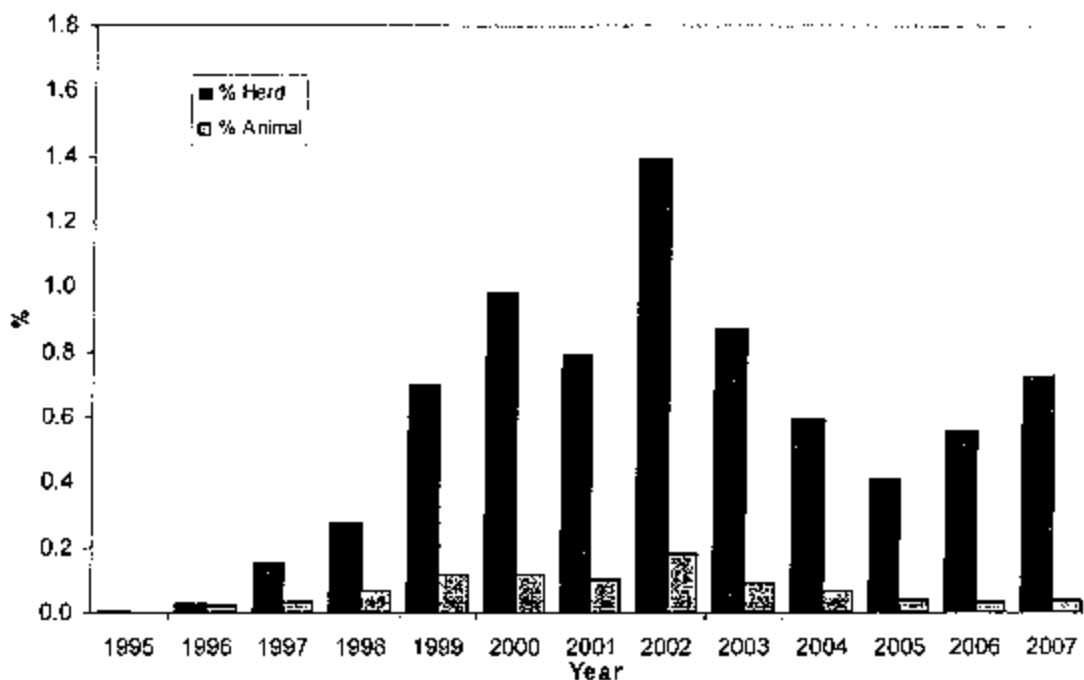


Figure 4: BR annual herd and animal incidence, 1995 to 2007

Most outbreaks are located in the south and west of the country, with 76% of outbreaks up to 2005 located in the three southern counties³ and 42% located in County Armagh. The distribution of outbreaks in 2007 is illustrated in Figure 5.

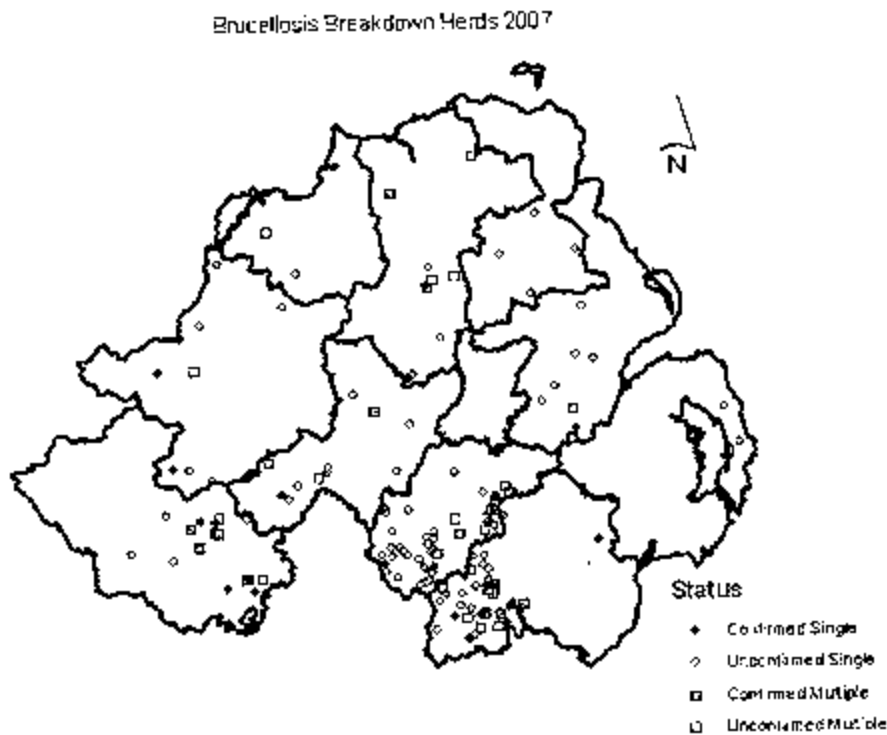


Figure 5: Location and Nature of Brucellosis Outbreaks, 2007.

A study of outbreaks between 1995 and 2005 showed that 47% of first incidents were identified at contiguous testing i.e. where infection is disclosed in herds in close proximity to outbreaks (Figure 6). However, some non-contiguous tests occurred in contiguous herds, for example, 40% of herds identified through post-abortion testing were tested within the previous six months due to contiguity with an infected herd. Adjusting for this resulted in 61% of incidents being first identified at such testing.

Twenty percent of incidents were disclosed at routine testing, mostly through the biennial or annual herd test. Excluding 1995, with only a single seropositive herd, the percentage of incidents identified at routine herd tests ranged from 7.4% (2003) to 40% (2005), with a 10-year mean of 16.6% (Table 3.3). The percentage of routine test disclosures increased in 2004 (15.4%) and 2005 (40%), from a previous 5-year mean of 11.5%. This corresponded with a

³ Abernethy D. (2008). *Epidemiology and Management of Bovine Brucellosis in N. Ireland*. PhD (submitted). University of London.

significant reduction in the proportion of incidents confirmed by bacteriological culture. Pre-movement testing of female cattle over 12 months old was introduced in late 2004 and subsequently identified six incidents. Serological reactors from two were confirmed by culture, while the other five comprised singleton, culture-negative reactors (see Chapter 5). Testing of milk samples from bulk-tanks commenced in 2001 and 43 incidents were subsequently confirmed at serology through such surveillance (see Chapter 5). Eighteen (41.9%) of these herds had completed a contiguous test within the previous six months.

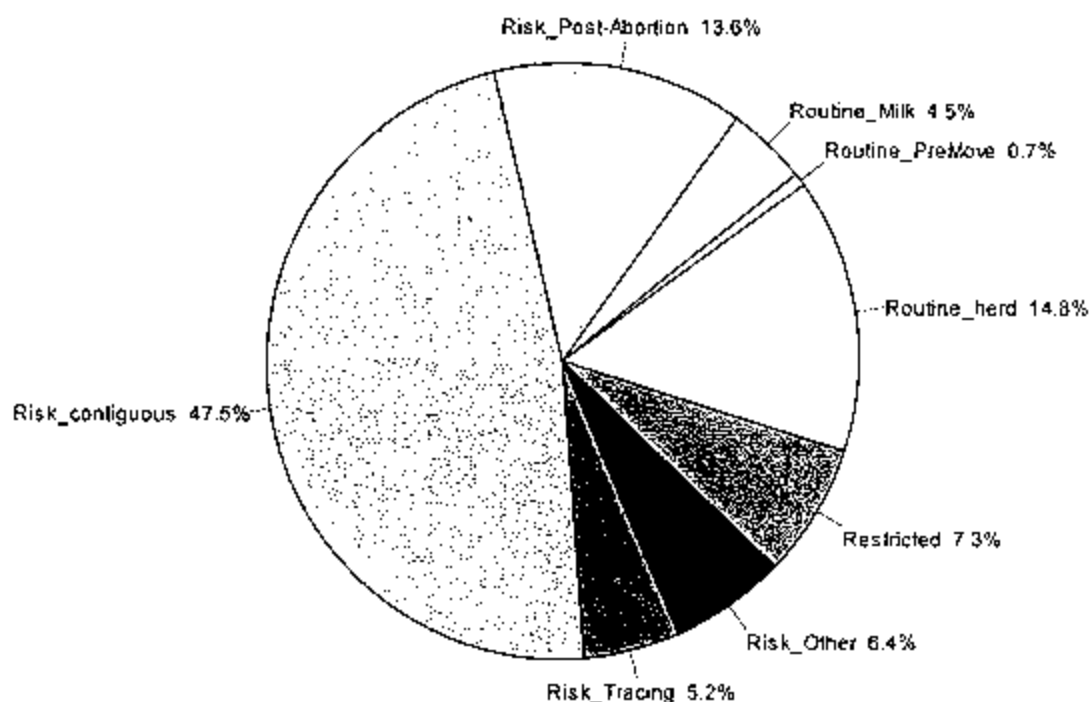


Figure 6: Cumulative frequency of outbreaks by test reason at disclosure (n = 961).

A range of epidemiological studies have been undertaken to explore risk factors for brucellosis and to assess the efficacy of programme management. Some of these have been, or are being published, and further information can be provided if required. The following provides a brief synopsis of findings to date:

- The nature of farming in Northern Ireland is highly conducive to the spread of brucellosis. Cattle density is the highest in the United Kingdom and farm fragmentation is extensive, exacerbated by relatively small farm sizes, an increase in herd size in the 1990s and renting of pasture. Approximately sixty percent of herds use multiple premises, with a mean of 31 contiguous herds per breakdown, 13 of which directly neighbour each herd. This increases the potential for widespread exposure to infected cows, particularly when many herds utilise outdoor or mixed calving systems. Trends within the cattle farming industry, in response to economic subsidies, have further increased the risk - the cattle population increased by 50% in the forty years before 1989 and by approximately 6% thereafter. These increases preceded a

significant rise in the incidence of both bovine tuberculosis and bovine brucellosis, suggesting an association with high stocking density⁴.

- The lengthy incubation period and latency associated with brucellosis reduces the sensitivity and negative predictive value of serological tests. This allows latently infected cattle to potentially escape the multiple, short-interval test regime surrounding outbreaks and may lead to an underestimate of the role of between-herd movement⁵.
- A case control study identified herd size, herd density, between-herd movement and proximity to infection as significant risk factors for brucellosis.
- A field trial utilising 6 serological tests was undertaken to compare the diagnostic parameters of the tests. Over 31,000 samples were analysed as part of this trial and active consideration is being given to various changes in the brucellosis programme from the results of the trial. Amongst others, parallel testing by SAT and iELISA in risk and restricted herd and individual tests is being used in some instances with the view to considering utilising the regime in all such test situations.
- Surveillance measures for brucellosis were assessed: there was negligible increase in risk associated with biennial testing (compared with annual testing) and post-abortion testing was the most significant due to the increased within-herd prevalence associated with abortions. Bulk Milk Tank testing was the most effective surveillance measure but the low percentage of dairy herds in the country and relatively low sensitivity of the procedure precluded it replacing serological testing.
- Four, inter-related factors were assessed and identified as being crucial in determining the success of the eradication programme: management of exposed contiguous herds, the level of compensation paid, biosecurity measures employed by farmers and the level of government investment in the programme.

⁴ Robinson P (2006). Cattle Subsidies in Northern Ireland 1990 – 2005: Their Influence on Cattle Demography, and Consequent Significance for Bovine Tuberculosis and Brucellosis Incidence. Dissertation for Royal College of Veterinary Surgeons Diploma in State Veterinary Medicine.

⁵ From: Stringer L. (2005). Risk Associated with Animals Moved from Herds Infected with Brucellosis in Northern Ireland – an historical cohort study. MSc Thesis, Royal Veterinary College, University of London, England.

3. Description of the submitted programme⁶:

The Public Service Agreement published by DARD has targets relating specifically to Brucellosis . These are ;

- **To reduce the level of serious animal disease by a reduction in Brucellosis cattle to less than 271 reactors and 4269 negative in-contacts at 31 March 2011.**

Current Programme

- (a) Routine annual herd tests are carried out in accordance with Directive 64/432. Routine Brucellosis blood sampling is carried out on cattle herds in Northern Ireland on an annual basis, with the exception of dairy herds in 7 lower incidence DVOs, which are routinely blood sampled on a biennial basis (with associated monthly bulk milk ELISA testing). Breeding and potential breeding cattle (female and bull cattle greater than 12 months of age) are subjected to serological testing on farm. An exception to test is made for bull beef cattle provided that the herdkeeper signs an undertaking to send these cattle directly to slaughter and that the OBF status in the herd is maintained at the herd test (i.e. the status of the herd is not withdrawn).
- (b) Compulsory Premovement testing of all female and bull cattle greater than 12 months of age. The requirement for cattle to have been premovement tested was introduced on 1st December 2004.
- (c) Cases of disease identified in the course of testing or notified to the Department result in the slaughter of affected and, in most cases where culture confirmation is obtained, all in-contact animals, the imposition of immediate movement restrictions on the holding and surrounding farms, tracing of cattle movements and an epidemiological investigation.

⁶ A concise description of the programme is given with the main objective(s) (monitoring, control, eradication, qualification of herds and/or regions, reducing prevalence and incidence ...), the main measures (testing, testing and slaughter, testing and killing, qualification of herds and animals, vaccination ...), the target animal population and the area(s) of implementation and the definition of a positive case.

- (d) Tests are carried out for non-routine reasons - restricted herds which are not depopulated, backward and forward traced animals or herds and herds considered to be at risk and animals of uncertain disease status. In the case of at-risk herds, these are restricted until appropriate check testing has been carried out. In the case of herds immediately contiguous to the Brucellosis breakdown herd the restriction is maintained during the initial period following restriction until the at-risk herd has shown two negative herd tests at an interval of at least three months.
- (e) Monthly bulk milk sampling is carried out in conjunction with the milk processing industry. A sample from the bulk tank is collected by the industry and submitted to the Veterinary Sciences Division of DARD for ELISA testing.
- (f) A blood sample from all cows aged over thirty months, is taken at the slaughter plant and the samples are subjected to brucellosis testing.
- (g) The Department continues to undertake a publicity campaign promoting the prevention, detection and reporting of the disease. Activities have included a programme of direct mail shots, posters, leaflets, fliers, press articles, newspaper and journal advertisements.
- (h) The use of EC approved Brucellosis vaccine is prohibited in the NI cattle population currently. Thus all herds are OBF status or have the OBF status suspended or withdrawn.
- (i) Thick Lime Milk treatment of slurry of Brucellosis breakdown herds where there is a significant risk of spread of infection by slurry.

4. Measures of the submitted programme

4.1. *Summary of measures under the programme*

Duration of the programme:

First year: Brucellosis was eradicated in NI herds by 1982 with the herds attaining OBF status and biennial herd testing was introduced in 1988. The resurgence of Brucellosis started to occur in mid 1996. A Brucellosis Policy Review was completed during 2002, following which a number of new measures have been introduced.

Last year: Still current

Control

- Testing
- Slaughter of positive animals
- Killing of positive animals
- Vaccination
- Treatment
- Disposal of products

Monitoring or surveillance

Other measures (*specify*):

Eradication

- Testing
- Slaughter of positive animals
- Killing of positive animals
- Extended slaughter or killing
- Disposal of products

4.2. *Designation of the central authority charged with supervising and coordinating the departments responsible for implementing the programme*⁷;

The Department of Agriculture and Rural Development is the designated competent authority.

4.3 *Description and delimitation of the geographical and administrative areas in which the programme is to be implemented*⁸ :

The programme extends to the entire region of Northern Ireland.

-
- ⁷ Describe the authorities charged with supervising and coordinating the departments responsible for implementing the programme and the different operators involved.
Describe the responsibilities of all involved.
- ⁸ Describe the name and denomination, the administrative boundaries, and the surface of the administrative and geographical areas in which the programme is to be applied.
Illustrate with maps.

4.4. *Measures implemented under the programme*⁹

4.4.1. **Measures and terms of legislation as regards the registration of holdings:**

All cattle herds in Northern Ireland are registered with the central authority and each has been allocated a unique herd number to facilitate tracing of animal movements. All registered premises are recorded on a central computer database. Full details of the testing programme are maintained on the database.

4.4.2. **Measures and terms of legislation as regards the identification of animals**¹⁰:

Under Council Regulation (EC) No 1760/2000 cattle are identified by means of a unique identification number authorised by the Department. All cattle born after 1 January 1998 are identified with an ear tag in each ear bearing the same unique identification number, which will remain with the animal throughout its life. All cattle born after 1 January 2000 must be tagged using the new all numeric tags.

Each animal's test results and movement details are held and are readily accessed on a computer database. Epidemiological investigation and full tracing procedures in compliance with Council Regulation 1760/2000 are instigated following the detection of a diseased animal

4.4.3 **Measures and terms of legislation as regards the notification of the disease:**

Brucellosis is a notifiable disease in Northern Ireland. Farmers are required by law (Brucellosis {Examination and Testing} Scheme Order {Northern Ireland} 2004) to present all eligible cattle for official testing. Both the herd keeper and any Veterinary Surgeon are required to report any abortion to the local Divisional Veterinary Officer (DVO).

4.4.4 **Measures and terms of legislation as regards the measures in case of a positive result**¹¹:

⁹ Where appropriate Community legislation is mentioned. Otherwise the national legislation is mentioned.

¹⁰ Not applicable for poultry.

¹¹ A short description is provided of the measures as regards positive animals (slaughter, destination of carcasses, use or treatment of animal products, the destruction of all products which could transmit the disease or the treatment of such products to avoid any possible contamination, a procedure for the disinfection of infected holdings, the

All breeding and potential breeding stock may be slaughtered depending on the epidemiological disease assessment carried out in any breakdown herd. Adjoining farmers are alerted and their herds are restricted. These herds are restricted and tested immediately and at least every 3 months until all infected contiguous herds have been cleared. In inner ring herds restrictions are lifted once there have been 2 negative herd tests. In outer ring herds restrictions are lifted following 1 clear herd test. Animals which have left a herd prior to infection being found are traced, placed under movement restriction and tested until calved or slaughtered. Where relevant, herds of origin are tested. A notice requiring cleansing and disinfection is served and on completion, an inspection of the premises is carried out by a Veterinary Officer. Progeny of reactor cattle are traced and removed to slaughter as appropriate. In the case of total herd depopulations the herdkeeper is prohibited from restocking the herd with cattle until a period of six months has elapsed from the date of depopulation. The competent authority has the power to require slurry on breakdown premises to be treated using Thick Lime Milk.

4.4.5 Measures and terms of legislation as regards the different qualifications of animals and herds:

Current legislation {Brucellosis (Examination and Testing) Scheme Order (Northern Ireland) 2004} permits the use of vaccination with Department approval. However the Policy currently is to prohibit the use of vaccine (Vaccination has been prohibited since 1963). Thus herds can be OBF or have their status suspended or withdrawn. The qualification of holdings is fully in line with the provisions of Annex A, II, to Dir 64/432/EEC.

4.4.6. Control procedures and in particular rules on the movement of animals liable to be affected or contaminated by a given disease and the regular inspection of the holdings or areas concerned¹²:

In accordance with Council Regulation EC No 1760/2000 all calves born after 1 January 1998 must be identified with an ear tag in each ear within 20 days from the birth of the animal. All cattle identification numbers are authorised by DARD and recorded on the computer database so that no duplication should be possible. The birth of a calf must be notified to the Department within 27 days and in any case before the animal leaves the holding of birth. All herd keepers must maintain a register of cattle born or moved into the herd. The register must show the identification number of the animal and details of replacement/retags. Herd keepers must also record in their register the colour, breed, type,

therapeutic or preventive treatment chosen, a procedure for the restocking with healthy animals of holdings which have been depopulated by slaughter and the creation of a surveillance zone around the infected holding....).

¹² A short description of the control procedures and in particular rules on the movement of animals liable to be affected or contaminated by a given disease and the regular inspection of the holdings or areas is provided.

sex, date of birth and the dam's identification number (for animals born in their herd). Their register must also show the date and means of acquisition of stock, the date of movement off holding, the address of premises to which the animal moved, or if died, the date and manner of disposal. These records must be retained for 10 years. From 1 January 2000 the movement permit system was replaced by movement control documents requiring a producer to notify the Department on the same day that an animal either leaves or arrives on his/her farm. However, in the case of a restricted animal the producer is required to obtain a movement licence from the Department in advance of moving the animal out of his/her herd. All movements are recorded and can be traced on the computer database. Stock on farms are checked against official records at cattle identification inspections/and herd tests, which occur at least annually, and when presented at markets or slaughterhouses. Discrepancies between the description of the animal and the details recorded on APHIS are investigated. If the discrepancy is not satisfactorily resolved a status is placed against the animal on APHIS which restricts its movement. Where the identification and traceability of an animal cannot be established at point of slaughter, the carcass will be removed from the human food chain. In the field where the disease status of an animal cannot be clearly established from the database the animal will be isolated and tested.

4.4.7. Measures and terms of legislation as regards the control (testing, vaccination, ...) of the disease: As per Directive 64/432/EEC. The test methods used on serology are SAT, CFT, EDTA (SAT) and ELISA (ELISA on high risk tests). The test method used on Bulk Milk Sampling is ELISA. Agri-Food and Bioscience Institute (AFBI), formerly the Veterinary Sciences Division of the Department of Agriculture and Rural Development, at Stoney Road, Belfast carry out the testing.

4.4.8. Measures and terms of legislation as regards the compensation for owners of slaughtered and killed animals:

Reactor animals and any relevant in-contact animals are valued on farm prior to slaughter. The amount of compensation varies depending on whether the animal is a reactor or an in-contact. In the case of reactors compensation is paid to a limit of 75% of the valuation or 75% of the average market value whichever is less. In the case of in-contact animals 100% of the market value is paid. Salvage value is paid to the competent authority. If that salvage is higher than compensation paid by the authority to the farmer, then the balance is paid to the farmer.

5. General description of the costs and benefits¹³ :

¹³ A description is provided of all costs for the authorities and society and the benefits for farmers and society in general.

Compensation for an in-contact animal is paid at the animal's market value. Compensation for a reactor animal is paid at the lesser of either 75% of the animal's market value or 75% of an average price calculated from market returns from a 4-week period (plus £300 for a pedigree animal).

Payment to hauliers to transport cattle to abattoirs for slaughter.

Cost of laboratory analysis of blood and milk samples.

General staff costs relating to the programme.

Payments to abattoirs in relation to slaughter of cattle.

Disposal of sharps and clinical waste.

Use of thick lime milk in slurry.

Monies received from the abattoir contracted to the Department for slaughter of cattle born after 31/7/96 – meat goes into food chain. Monies received from Rural Payments Agency for cattle born before 1/8/96 under the 'Older Cattle Disposal Scheme'.

Other Costs and Benefits

Note:- *The following has been extracted from the 2002 Control of Bovine Brucellosis Policy Review*

The 1993 NIAO report identifies the following potential benefits from the Department's disease control programme objectives, which have, in essence, not changed:

- i) protecting a valuable live animal trade;

- ii) maintaining an important “health status” for exports;
- iii) avoiding trade restrictions prohibiting export of animals or meat from infected herds;
- iv) avoiding the economic losses associated with the disease;
- v) reducing risk to human health; and
- vi) producing animal welfare benefits.

For illustrative purposes, the following details the level of impact required by the brucellosis eradication programme to achieve a breakeven (in terms of economic costs and benefits) in relation to human health and cattle output.

Human Health

The United Kingdom’s Department of Environment, Transport and the regions (1997) provided a cost of a ‘slight’ casualty to a human (representing loss of earnings, welfare costs etc.) When this is adjusted to reflect 2000/01 prices it equates to approximately £8,000. If the 2000/01 cost of the brucellosis eradication programme were measured solely against this indicator, the programme would have to prevent over 1,340 people from becoming infected by brucellosis through contact with cattle (i.e. 4% of the number of those working on farms) to be judged cost effective in purely economic terms.

Output - Cattle

The DARD Statistical Review of NI Agriculture (2001) identifies the total value of output of finished cattle and calves and milk in 2001 as £683.7 million. The 2000/01 cost of the brucellosis eradication programme represents 1.6 percent of this level of this output. Therefore, for the brucellosis eradication programme to be cost effective, it should protect its equivalent amount in cattle output.

Although the above broad-brush analysis has its limitations, it demonstrates that the brucellosis programme requires a relatively low level of economic benefit (1.6 per cent of the sector's output) to justify its existence. However, this level of benefit produced by the programme cannot be accurately quantified, as it is difficult to predict the value of costs that would occur in the absence of such a programme.

6.1.1.1. Data on herds^(a) (one table per year and per disease/species)

Year: 2007

Situation on date: 14 March 2008

Disease^(b): BRUCELLOSIS

Animal species: BOVINE

Region ^(a)	Total number of herds ^(a)	Total number of herds under the programme	Number of herds checked ^(m)	Number of positive herds ⁽ⁿ⁾	Number of new positive herds ^(a)	Number of herds depopulated	% positive herds depopulated	INDICATORS		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd incidence
I	2	3	4	5	6	7	8 = (7/5) x 100	9 = (4/2) x 100	10 = (5/4) x 100	11 = (6/4) x 100
N. Ireland	26,915 ⁱ	26,915 ⁱ	24,139 ⁱⁱ	157	151	60	34.2	89.7	0.75 ⁱⁱⁱ	0.72 ⁱⁱⁱ
Total	26,915 ⁱ	26,915 ⁱ	24,139 ⁱⁱ	157	151	60	34.2	89.7	0.75 ⁱⁱⁱ	0.72 ⁱⁱⁱ

ⁱ Number of cattle herds in which cattle were presented at a TB herd test during the last 4 years

ⁱⁱ Herds with a herd level BR test where number of cattle > 0 (20,893 herds had a herd test where cattle were presented of 21,256 in same period of 2006). Also, see also ⁱⁱⁱ below

ⁱⁱⁱ Prevalence and incidence figures were calculated using the herds which presented cattle at a herd test.

6.1.1.1. Data on herds^(a) (one table per year and per disease/species)

Year: 2006

Situation on date: 16 March 2007

Disease^(b): BRUCELLOSIS

Animal species: BOVINE

Region ^(c)	Total number of herds ^(a)	Total number of herds under the programme	Number of herds checked ^(a)	Number of positive herds ^(c)	Number of new positive herds ^(a)	Number of herds depopulated	% positive herds depopulated	INDICATORS		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd incidence
1	2	3	1	5	6	7	8 = (7/5) x 100	9 = (4/3) x 100	10 = (5/4) x 100 ^v	11 = (6/4) x 100 ^v
N. Ireland	27,694 ¹	27,694 ²	24,423 ⁱⁱ	120	118	57	47.5	88.2	0.565 ⁱⁱⁱ	0.555 ⁱⁱⁱ
Total	27,694 ¹	27,694 ²	24,423 ⁱⁱ	120	118	57	47.5	88.2	0.565 ⁱⁱⁱ	0.555 ⁱⁱⁱ

ⁱ Number of cattle herds in which cattle were presented at a 1/3 herd test during the last 4 years

ⁱⁱ Herds with a herd level BR test where number of cattle ≥ 0 (21,256 herds had a herd test where cattle were presented of 21,568 in same period of 2005). Also, see also " below

ⁱⁱⁱ Prevalence and incidence figures were calculated using the herds which presented cattle at a herd test.

6.1.1.1. Data on herds^(a) (one table per year and per disease/species)

Year: 2005

Situation on date:

Disease^(b): BRUCELLOSIS

Animal species: BOVINE

Region ^(a)	Total number of herds ^(a)	Total number of herds under the programme	Number of herds checked ^(c)	Number of positive herds ^(a)	Number of new positive herds ^(a)	Number of herds depopulated	% positive herds depopulated	INDICATORS		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd incidence
I	2	3	4	5	6	7	$8 = (7/3) \times 100$	$9 = (4/3) \times 100$	$10 = (5/4) \times 100$	$11 = (6/4) \times 100$
N. Ireland	28,263 ²	28,263 ²	25,392 ²	94	88	22	23.4	89.8	0.43% ²	0.40% ²
Total	28,263	28,263	25,392	94	88	22	23.4	89.8	0.43%	0.40%

¹ Number of cattle herds in which cattle were presented at a TB herd test during the last 4 years

² Herds with a herd level BR test where number of cattle ≥ 0 (21,568 herds had a herd test where cattle were presented of 20,991 in same period of 2004). Also, see also ³ below

³ Prevalence and incidence figures were calculated using the herds which presented cattle at a herd test.

6.1.1.1. Data on herds^(a) (one table per year and per disease/species)

Year: 2004

Situation on date:

Disease^(b): BRUCELLOSIS

Animal species: BOVINE

Region ⁽¹⁾	Total number of herds ^(a)	Total number of herds under the programme	Number of herds checked ^(b)	Number of positive herds ^(b)	Number of new positive herds ^(c)	Number of herds depopulated	% positive herds depopulated	INDICATORS		
								% herd coverage	% positive herds	% new positive herds
I	2	3	4	5	6	7	8 = (7/3) x 100	9 (4/3) x 100	10 (5/3) x 100 ^(iv)	11 = (6/4) x 100 ^(iv)
N Ireland	28,568 ⁽¹⁾	28,568 ⁽¹⁾	25,633 ⁽¹⁾	148	125	66	44.6	89.7 ⁽ⁱⁱ⁾	0.71 ^(iv)	0.60 ^(iv)
Total	28,568	28,568	25,633	148	125	66	44.6	89.7	0.71	0.60

⁽¹⁾ Based on number of cattle herds presenting cattle for a TB herd tests during the last four years

ii Herds which were due a Br herd level test including herds with no eligible stock for Br testing (20,991 herds had eligible cattle present at a herd test – see also iv below)

iii 7 of 10 administrative divisions were on biennial blood testing, thus a significant proportion of the total herds were not due a test in 2003

iv Prevalence and incidence figures were calculated using the herds which presented cattle at a herd test.

6.1.1.1. Data on herds^(a) (one table per year and per disease/species)

Year: 2003

Situation on date:

Disease^(b): BRUCELLOSIS

Animal species: BOVINE

Region ^(c)	Total number of herds ^(a)	Total number of herds under the programme	Number of herds checked ^(d)	Number of positive herds ^(e)	Number of new positive herds ^(a)	Number of herds depopulated	% positive herds depopulated	INDICATORS		
								% herd coverage	% positive herds	% new positive herds
I	2	3	4	5	6	7	$8 = (7/5) \times 100$	$9 = (4/5) \times 100$	$10 = (5/4) \times 100$ ^(f)	$11 = (6/4) \times 100$ ^(f)
N. Ireland	30,367 ^(g)	30,367 ^(h)	25,635 ⁽ⁱ⁾	175	161	88	50.3	84.4 ⁽ⁱⁱ⁾	0.95 ^(iv)	0.87 ^(iv)
Total	30,367	30,367	25,635	175	161	88	50.3	84.4	0.95	0.87

^(a) Based on number of cattle herds presenting cattle for a TB herd tests during the last four years

^(b) Herds which were due a Br herd level test including herds with no eligible stock for Br testing (18,441 herds had eligible cattle present at a herd test – see also below)

^(c) 7 of 10 administrative divisions were on biennial blood testing, thus a significant proportion of the total herds were not due a test in 2003

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iv Prevalence and incidence figures were calculated using the herds which presented cattle at a herd test.

6.1.1.2. Data on animals (one table per year and per disease/species)

Year: 2007

Situation on date: 14 March 2008

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Total number of animals ^(c)	Number of animals ^(c) to be tested under the programme	Number of animals ^(c) tested	Number of animals tested individually ^(c)	Number of positive animals	Slaughtering		INDICATORS	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered ^(d)	% coverage at animal level	% positive animals Animal prevalence
1	2	3	4	5	6	7	8	$\frac{7}{4} \times 100$	$\frac{10-(6-4)}{2} \times 100$
N Ireland	1,643,458 ^(e)	945,318 ^(f)	973,529	911,394	402	402	6,585	103.0 ⁱⁱⁱ	0.041
Total	1,643,458 ^(e)	945,318 ^(f)	973,529	911,394	402	402	6,585		0.041

(a) Disease and animal species if necessary.

(b) Region as defined in the approved eradication programme of the Member State.

(c) Total number of animals existing in the region including eligible herds and non-eligible herds for the programme.

(d) Includes animals tested individually or under bulk level scheme.

(e) Include only animals tested individually, do not include animals tested by bulk level samples (e.g.: milk tank tests).

(f) Include all positive animal slaughtered and also the negative animals slaughtered under the programme.

ⁱⁱⁱFrom June Agricultural Census

^a Based on the average number of cattle presented at Br herd tests over the last 4 years.

^b 96.4% animal coverage for individual tests (> 100% because of repeat herd testing and births & deaths through the year. Denominator also an estimate based on average herd size over last 4 years).

6.1.1.2. Data on animals (one table per year and per disease/species)

Year: 2006

Situation on date: 16 March 2007

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Total number of animals ^(c)	Number of animals ^(d) to be tested under the programme	Number of animals ^(e) tested	Number of animals tested individually ^(f)	Number of positive animals	Slaughtering		INDICATORS	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered ^(g)	% coverage at animal level	% positive animals Animal prevalence
1	2	3	4	5	6	7	8	$9 = (7/8) \times 100$	$10 = (6/2) \times 100$
N. Ireland	1,635,727 ^(h)	938,061 ⁽ⁱ⁾	983,127	928,445	313	313	4,986	103.0 ^(j)	0.032
Total	1,635,727 ^(h)	938,061 ⁽ⁱ⁾ *	983,127	928,445	313	313	4,986	103.0 ^(j)	0.032

(a) Disease and animal species if necessary.

(b) Region as defined in the approved eradication programme of the Member State.

(c) Total number of animals existing in the region including eligible herds and non-eligible herds for the programme.

(d) Includes animals tested individually or under bulk level scheme.

(e) Include only animals tested individually, do not include animals tested by bulk level samples (e.g.: milk bulk tank tests).

(f) Include all positive animal slaughtered and also the negative animals slaughtered under the programme.

^(g) From June Agricultural Census

^a Based on the average number of cattle presented at Br herd tests over the last 4 years.

^b 99.0% animal coverage for individual tests (>100% because of repeat herd testing and births & deaths through the year. Denominator also an estimate based on average herd size over last 4 years).

6.1.1.2.

Data on animals (one table per year and per disease/species)

Year: 2005

Situation on date:

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Total number of animals ^(c)	Number of animals ^(d) to be tested under the programme	Number of animals ^(d) tested	Number of animals tested individually ^(e)	Number of positive animals	Slaughtering		INDICATORS	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered ^(h)	% coverage at animal level	% positive animals Animal prevalence
1	2	3	4	5	6	7	8	9 (4+7)/8*100	10 (6+4)/8*100
N. Ireland	1,665,608	924,687	973,570	911,791	384	384	2,964	105 ⁽ⁱ⁾	0.039
Total	1,665,608	924,687	973,570	911,791	384	384	2,964	105	0.039

(a) Disease and animal species if necessary.

(b) Region as defined in the approved eradication programme of the Member State.

(c) Total number of animals existing in the region including eligible herds and non-eligible herds for the programme.

(d) Includes animals tested individually or under bulk level scheme.

(e) Include only animals tested individually, do not include animals tested by bulk level samples (e.g.: milk bulk tank tests).

(f) Include all positive animal slaughtered and also the negative animals slaughtered under the programme.

^c From June Agricultural Census

^a Based on the average number of cattle presented at Br herd tests over the last 4 years.

^b 98.6% animal coverage for individual tests (>100% because of repeat herd testing and births & deaths through the year. Denominator also an estimate based on average herd size over last 4 years).

6.1.1.2. Data on animals (one table per year and per disease/species)

Year: 2004

Situation on date:

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Total number of animals ^(c)	Number of animals ^(a) to be tested under the programme	Number of animals ^(a) tested	Number of animals tested individually ^(a)	Number of positive animals	Slaughtering		INDICATORS	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered ^(d)	% coverage at animal level	% positive animals Animal prevalence
I	2	3	4	5	6	7	8	9=(7/8)x100	10=(6/8)x100
N. Ireland	1,677,583 ^f	930,586 ^g	930,221	860,674	620	620	6,655	99.96	0.067
Total	1,677,583	930,586	930,221	860,674	620	620	6,655	99.6	0.67

(a) Disease and animal species if necessary.

(b) Region as defined in the approved eradication programme of the Member State.

(c) Total number of animals existing in the region including eligible herds and non-eligible herds for the programme.

(d) Includes animals tested individually or under bulk level scheme.

- (e) Include only animals tested individually, do not include animals tested by bulk level samples (e.g.: milk bulk tank tests).
 (f) Include all positive animal slaughtered and also the negative animals slaughtered under the programme.

¹ From June Agricultural Census 2004

ⁱⁱ Based on average number of cattle presented at Br herd tests over the last 4 years

6.1.1.2. Data on animals (one table per year and per disease/species)

Year: 2003

Situation on date:

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Total number of animals ^(c)	Number of animals ^(d) to be tested under the programme	Number of animals ^(d) tested	Number of animals tested individually ^(e)	Number of positive animals	Slaughtering		INDICATORS	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered ^(f)	% coverage at animal level	% positive animals Annual prevalence
1	2	3	4	5	6	7	8	9=(4/3)x100	10=(6/4)x100
N. Ireland	1,685,254 ¹	913,152 ⁱⁱ	816,295	749,981	734	734	11,532	89,4 ⁱⁱ	0,09
Total	1,685,254	913,152	816,295	749,981	734	734	11,532	89,4	0,09

6.2. Stratified data on surveillance and laboratory tests

6.2.1. Stratified data on surveillance and laboratory tests (one table per year and per disease/species)

Year: 2007 Disease^(a): Brucellosis Animal species/category^(b): Bovine

Description of the used serological tests: (SAT) Serum Agglutination Test (CFT) Complement Fixation Test (ELISA) Enzyme Linked Immunosorbent Assay

Description of the used microbiological or virological tests: Culture of lymph nodes and vaginal swabs

Description of the other used tests:

Region ^(c)	Serological tests		Microbiological or virological tests		Other tests	
	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)
Northern Ireland	Blood 1,291,960	808	377*	99*		
	Milk 31,280	22				
Total	1,323,240	830	277	99		

(a) Disease and animal species if necessary.

(b) Breeders, laying hens, etc. when appropriate

(c) Region as defined in the approved eradication programme of the Member State.

(d) Number of samples tested, all confounded.

(e) Number of positive samples, all confounded

* 1,260,709 samples from on-farm testing and 31,251 from over thirty month slaughter samples & older cattle disposal scheme

* Samples equates to all tissue samples or swabs taken from one animal on a specified day. Samples submitted for routine diagnostic purposes are not included.

6.2.1. Stratified data on surveillance and laboratory tests (one table per year and per disease/species)

Year: 2006 Disease^(a): Brucellosis Animal species/category^(b): Bovine

Description of the used serological tests: (SAT) Serum Agglutination Test (CFT) Complement Fixation Test (ELISA) Enzyme Linked Immunosorbent Assay

Description of the used microbiological or virological tests: Culture of lymph nodes and vaginal swabs

Description of the other used tests:

Region ^(c)	Serological tests		Microbiological or virological tests		Other tests	
	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)
Northern Ireland	Blood 1,302,420	680	192*	114		
	Milk 38,917	21				
Total	1,341,337	701	192	114		

(a) Disease and animal species if necessary.

(b) Breeders, laying hens, etc, when appropriate

(c) Region as defined in the approved eradication programme of the Member State.

(d) Number of samples tested, all confounded.

(e) Number of positive samples, all confounded.

* 1,302,420 samples from on-farm testing and 20,568 from over thirty month slaughter samples & older cattle disposal scheme

* Samples equate to animals as multiple tissue samples from one animal is counted as one sample in the above figures

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6.2.1. *Stratified data on surveillance and laboratory tests (one table per year and per disease/species)*

Year: 2005

Disease^(a): Brucellosis Animal species/category^(b): Bovine

Description of the used serological tests: (SAT) Serum Agglutination Test (CFT) Complement Fixation Test (ELISA) Enzyme Linked Immunosorbent Assay

Description of the used microbiological or virological tests: Culture of lymph nodes and vaginal swabs

Description of the other used tests:

Region ^(c)	Serological tests		Microbiological or virological tests		Other tests	
	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)
Northern Ireland	1,329,340 Blood-	739	178 *	77		
	45,760 Milk	27				
Total	1,375,100	766	178	77		

(a) Disease and animal species if necessary.

(b) Breeders, laying hens, etc, when appropriate

(c) Region as defined in the approved eradication programme of the Member State.

(d) Number of samples tested, all confounded.

(e) Number of positive samples, all confounded

~ 1,255,629 samples from on-farm testing and 73,711 from over thirty month slaughter samples

* Samples equate to animals as multiple tissue samples from one animal is counted as one sample in the above figures

6.2.1. Stratified data on surveillance and laboratory tests (one table per year and per disease/species)

Year: 2004 Disease^(a): Brucellosis Animal species/category^(b): Bovine

Description of the used serological tests: (SAT) Serum Agglutination Test (CFT) Complement Fixation Test (ELISA) Enzyme Linked Immunosorbent Assay

Description of the used microbiological or virological tests: Culture of lymph nodes and vaginal swabs

Description of the other used tests:

Region ^(a)	Serological tests		Microbiological or virological tests		Other tests	
	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)	Number of samples tested ^(d)	Number of positive samples ^(e)
Northern Ireland	1,320,784 Blood-	1135	499	232		
	46,888 Milk	188				
Total	1,367,672	1,323	499	232		

- (a) Disease and animal species if necessary.
- (b) Breeders, laying hens, etc, when appropriate
- (c) Region as defined in the approved eradication programme of the Member State.
- (d) Number of samples tested, all confounded.
- (e) Number of positive samples, all confounded

-- 1,243,115 samples from on-farm testing and 77,669 from over thirty month slaughter samples

6.2.1. Stratified data on surveillance and laboratory tests (one table per year and per disease/species)

Year: 2003

Disease^(a): Bruceellosis Animal species/category^(b): Bovine

Description of the used serological tests: (SAT) Serum Agglutination Test (CFT) Complement Fixation Test (ELISA) Enzyme Linked Immunosorbent Assay

Description of the used microbiological or virological tests: Culture of lymph nodes and vaginal swabs

Description of the other used tests:

Region ^(c)	Serological tests		Microbiological or virological tests	Other tests	
	Number of samples tested ^(d)	Number of positive samples ^(e)		Number of samples tested ^(d)	Number of positive samples ^(e)
Northern Ireland	1,090,421 Blood	1,429	426	230	
	50,312 MILK	72			
Total	1,140,733	1501	426	230	

(a) Disease and animal species if necessary.

(b) Breeders, laying hens, etc, when appropriate

(c) Region as defined in the approved eradication programme of the Member State.

(d) Number of samples tested, all confounded.

(e) Number of positive samples, all confounded

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(b) Region as defined in the eradication programme of the Member State.

(c) Herds equal flocks, or holdings as appropriate.

^ Based culture results from reactor animals taken at date of first disclosure of the reactor animal.

6.3. Data on infection (one table per year and per disease/species)

Year: 2004

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Number of herds infected ^(c)	Number of animals infected
N. Ireland	73	232
Total	73	232

(a) Disease and animal species if necessary.

(b) Region as defined in the eradication programme of the Member State.

(c) Herds equal flocks, or holdings as appropriate.

6.3. Data on infection (one table per year and per disease/species)

Year: 2003

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Number of herds infected ^(c)	Number of animals infected
N. Ireland	149	208
Total	149	208

(a) Disease and animal species if necessary.

(b) Region as defined in the eradication programme of the Member State.

(c) Herds equal flocks, or holdings as appropriate.

6.4. Data on the status of herds at the end of each year¹⁵

Year: 2007

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Status of herds and animals under the programme ^(c)													
	Total number of herds and animals under the programme		Unknown ^(d)		Not free or not officially free				Free or officially free suspended ^(e)		Free ⁽ⁿ⁾		Officially free ^(o)	
					Last check positive ^(e)									
	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾
N. Ireland	26915	945318	0	0	33	4308	103	4147	1524	61824	n/a	n/a	25255	875039
Total	26915	945318	0	0	33	4308	103	4147	1524	61824	n/a	n/a	25255	875039

¹⁵ Data to provide for Bovine tuberculosis, Bovine brucellosis, IBR/IPV (A) + embryo units, Ovine and caprine brucellosis (B. melitensis), enzootic bovine leukosis (EBL), Aujeszky's disease, Maedi/Visna and CAEV, IBR/IPV (other types of enterprise), Johnes disease (paratuberculosis).

6.4. Data on the status of herds at the end of each year¹⁶

Year: 2006

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Status of herds and animals under the programme ^(c)													
	Total number of herds and animals under the programme		Unknown ^(d)		Not free or not officially free				Free or officially free suspended ^(e)		Free ^(h)		Officially free ⁽ⁱ⁾	
					Last check positive ^(e)		Last check negative ^(f)		Herds	Animals ^(g)	Herds	Animals ^(g)	Herds	Animals ^(g)
	Herds	Animals ^(g)	Herds	Animals ^(g)	Herds	Animals ^(g)	Herds	Animals ^(g)						
N. Ireland	27,694	938,061	0	0	28	2,402	112	6,697	79	5,960	n/a	n/a	27,475	923,002
Total	27,694	938,061	0	0	28	2,402	112	6,697	79	5,960	n/a	n/a	27,475	923,002

¹⁶ Data to provide for Bovine tuberculosis, Bovine brucellosis, IBR/IPV (AI + embryo units), Ovine and caprine brucellosis (B. melitensis), Enzootic bovine leukosis (EBL), Aujeszky's disease, Macdi'Visna and CAEV, IBR/IPV (other types of enterprisc), Johnes disease (paratuberculosis).

6.4. Data on the status of herds at the end of each year¹⁷

Year: 2005

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Status of herds and animals under the programme ^(c)													
	Total number of herds and animals under the programme		Unknown ^(d)		Not free or not officially free				Free or officially free suspended ^(e)		Free ^(b)		Officially free ^(b)	
					Last check positive ^(c)		Last check negative ^(d)		Herds	Animals ^(d)	Herds	Animals ^(d)	Herds	Animals ^(d)
	Herds	Animals ^(d)	Herds	Animals ^(d)	Herds	Animals ^(d)	Herds	Animals ^(d)						
N. Ireland	28,263	924,687	0	0	28	3,050	89	6,890	53	1,870	N/A	N/A	28,093	912,877
Total	28,263	924,687	0	0	28	3,050	89	6,890	53	1,870	N/A	N/A	28,093	912,877

(a) Disease and species if necessary

(b) Region as defined in the approved eradication programme of the Member State

(c) At the end of the year

(d) Unknown: No previous checking results available

(e) Not free and last check positive: Herd checked with at least one positive result in the latest check

(f) Not free and last check negative: Herd checked with negative results in the latest check but not being "free" or "officially free"

(g) Suspended as defined in Community or national legislation for the respective disease at the end of the reporting period.

¹⁷ Data to provide for Bovine tuberculosis, Bovine brucellosis, IBR/IPV (AI + embryo units), Ovine and caprine brucellosis (*B. melitensis*), Enzootic bovine leukosis (EBL), Aujeszky's disease, Maedi/Visna and CAEV, IBR/IPV (other types of enterprise), Johne's disease (paratuberculosis).

- (h) **Free herd** as defined in Community or national legislation for the respective disease.
- (i) **Officially free herd** as defined in Community or National legislation for the respective disease .
- (j) **Include animals under the programme in the herds with the referred status (left column).**

6.4. Data on the status of herds at the end of each year¹⁸

Year: 2004

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Status of herds and animals under the programme ^(c)													
	Total number of herds and animals under the programme		Unknown ^(d)		Not free or not officially free				Free or officially free suspended ^(e)		Free ^(f)		Officially free ^(g)	
			Herds	Animals ^(h)	Herds	Animals ^(h)	Last check positive ^(e)	Last check negative ⁽ⁱ⁾		Herds	Animals ^(h)	Herds	Animals ^(h)	Herds
N. Ireland	28,568	930,586	0	0	40	4300	28	1221	28	1634	n/a	n/a	28,472	923,431
Total	28,568	930,586	0	0	40	4300	28	1221	28	1634	n/a	n/a	28,472	923,431

(a) Disease and species if necessary

(b) Region as defined in the approved eradication programme of the Member State

(c) At the end of the year

(d) Unknown: No previous checking results available

(e) Not free and last check positive: Herd checked with at least one positive result in the latest check

(f) Not free and last check negative: Herd checked with negative results in the latest check but not being "free" or "officially free"

(g) Suspended as defined in Community or national legislation for the respective disease at the end of the reporting period.

¹⁸ Data to provide for Bovine tuberculosis, Bovine brucellosis, IBR/IPV (AI + embryo units), Ovine and caprine brucellosis (B. melitensis), Enzootic bovine leukosis (EBL), Aujeszky's disease, Maedi/Visna and CAEV, IBR/IPV (other types of enterprisc), Johnes disease (paratuberculosis).

- (h) Free herd as defined in Community or national legislation for the respective disease.
- (i) Officially free herd as defined in Community or National legislation for the respective disease.
- (j) Include animals under the programme in the herds with the referred status (left column).

6.4. Data on the status of herds at the end of each year¹⁹

Year: 2003

Disease^(a): BRUCELLOSIS

Animal species: BOVINE

Region ^(b)	Status of herds and animals under the programme ^(c)											
	Total number of herds and animals under the programme		Unknown ^(d)		Not free or not officially free		Free or officially free suspended ^(e)		Free ^(f)		Officially free ^(g)	
	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾	Last check positive ^(e)	Last check negative ^(f)	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾	Herds	Animals ⁽ⁱ⁾
N. Ireland	30,367	913,152	0	0	38	154	7,499	1,115	N/A	N/A	29,060	865,567
Total	30,367	913,152	0	0	38	154	7,499	1,115	N/A	N/A	29,060	865,567

(a) Disease and species if necessary

(b) Region as defined in the approved eradication programme of the Member State

(c) At the end of the year

(d) Unknown: No previous checking results available

(e) Not free and last check positive: Herd checked with at least one positive result in the latest check

(f) Not free and last check negative: Herd checked with negative results in the latest check but not being "free" or "officially free"

(g) Suspended as defined in Community or national legislation for the respective disease at the end of the reporting period.

¹⁹ Data to provide for Bovine tuberculosis, Bovine brucellosis, IBR/IPV (AI - embryo units), Ovine and caprine brucellosis (B. melitensis), Enzootic bovine leukosis (EBL), Aujeszky's disease, Maedi/Visna and CAEV, IBR/IPV (other types of enterprise), Johnes disease (paratuberculosis).

- (b) Free herd as defined in Community or national legislation for the respective disease.
- (i) Officially free herd as defined in Community or National legislation for the respective disease .
- (i) Include animals under the programme in the herds with the referred status (left column).

6.5. Data on vaccination or treatment programmes²⁰

(NOT APPLICABLE)

Year:

Disease^(a):

Animal species:

Description of the used vaccination, therapeutic or other scheme:

Region ^(b)	Total number of herds ^(c)	Total number of animals	Information on vaccination or treatment programme						
			Number of herds ^(c) in vaccination or treatment programme	Number of herds ^(c) vaccinated or treated	Number of animals vaccinated or treated	Number of doses of vaccine or treatment administered	Number of adults ^(d) vaccinated	Number of young ^(d) animals vaccinated	
Total									

(a) Disease and species if necessary

(b) Region as defined in the approved eradication programme of the Member State

(c) Herds equal flocks, or holdings as appropriate

²⁰

Data to provide, where appropriate for Bovine brucellosis, IBR/IPV (AI + embryo units), Ovine and caprine brucellosis (*B. melitensis*), Avian influenza, Anisakidosis, Salmonella pullorum, Salmonella gallinarum, Anthrax, IBR/IPV (other types of enterprize), Johne's disease (paratuberculosis), Mycoplasma gallisepticum, heartwater transmitted by vector insects in the French overseas departments, babesiosis transmitted by vector insects in the French overseas departments, anaplasmosis transmitted by vector insects in the French overseas departments, Bluetongue in epidemic or high risk areas, Rabies, Ichninococcosis and salmonellosis (zoonotic salmonella) and agents thereof.

- (d) Only for Bovine brucellosis, Ovine and caprine brucellosis (*B. melitensis*) and zoonotic salmonella, and as defined in the programme

6.6. Data on wildlife²¹ (NOT APPLICABLE)

6.6.1. Estimation of wildlife population

Year: _____ Method of estimation^(a): _____

Region ^(b)	Estimation of the population of the concerned wild species	
	Species:	Species:
Total		

(a) The hunting bag is considered to be the standard method of estimation. If other method is used, explain

(b) Region as defined in the approved eradication programme of the Member State

²¹ Data to provide for Bovine brucellosis, Ovine and caprine brucellosis (*B. melitensis*), Avian influenza, African Swine fever, swine vesicular disease, endemic classical swine fever, Rabies, Echinococcosis and trichinellosis and agents thereof.

7. Targets

7.1. Targets related to testing 2009

7.1.1. *Targets on diagnostic tests*

7.1.1.1. Number and specification of tests

Disease^(a): Brucellosis Animal species: Bovine

<u>Region^(b)</u>	<u>Type of the test^(c)</u>	<u>Target population^(d)</u>	<u>Type of sample^(e)</u>	<u>Objective^(f)</u>	<u>Number of planned tests</u>
N Ireland	SAT (EDTA) / CFT / ELISA*	Breeding cattle greater than 12 months old	Blood	Surveillance	1,240,000
	SAT (EDTA) / CFT	Cattle born before 1/8/96	Blood	Surveillance	5,000
	ELISA	Dairy Herds / Herds with a dairy component	Milk	Surveillance	35,000
	SAT (EDTA) / CFT	Breeding cattle (> 12 months) prior to movement	Blood	Premovement test	170,000
	SAT (EDTA) / CFT	Cattle aged over 30 months, born from 1/8/96	Blood	Surveillance	40,000
Total					1,490,000

(a) Disease and species if necessary

(b) Region as defined in the approved eradication programme of the Member State

(c) Description of the test (e.g. SN-test, AB-Elisa, RBT, ...)

(d) Specification of the targeted species and the categories of targeted animals (e.g. sex, age, breeding animal, slaughter animal, ...)

(e) Description of the sample (e.g. blood, serum, milk, ...)

(f) Description of the objective (e.g. qualification, surveillance, confirmation of suspected cases, monitoring of campaigns, seroconversion, control on deleted vaccines, testing of vaccine, control of vaccination, ...)

* high risk tests

7.2.1.2. Testing scheme(s)²²:

This has been described in section 3.

²²

Describe the testing scheme according the different categories if appropriate (which herds and animals, the number of animals per herd, the frequency and the interval of sampling) with reference to the national and Community legislation where appropriate.

7.1.2. Targets on testing herds and animals²³

7.1.2.1 Targets on the testing of herds^(a)

Disease^(b): Brucellosis Animal species: **Bovine**

Region ^(c)	Total number of herds ^(d)	Total number of herds under the programme	Number of herds expected to be checked ^(e)	Number of expected positive herds ^(f)	Number of expected new positive herds ^(g)	Number of herds expected to be depopulated	% positive herds expected to be depopulated	TARGET INDICATORS		
								Expected % herd coverage	% positive herds inspected period herd prevalence	% new positive herds Expected herd incidence
1	2	3	4	5	6	7	$8 = (7/5) \times 100$	$9 = (6/3) \times 100$	$10 = (5/4) \times 100$	$11 = (6/2) \times 100$
N. Ireland	26,000	26,000	26,000	150	145	60	40	100	0.58	0.56
Total	26,000	26,000	26,000	150	145	60	40	100	0.58	0.56

(a)

²³ Data to provide for Bovine tuberculosis, Bovine brucellosis, IBR/IPV (AI – embryo units), Ovine and caprine brucellosis (B. melitensis), Fitzootic bovine leukosis (FBL), Aujeszky's disease, Anthrax, Maedi/Visna and CAEV, IBR/IPV (other types of enterprise), Johnes disease (paratuberculosis), CBPP, African Swine fever, swine vesicular disease, endemic classical swine fever, heartwater transmitted by vector insects in the French overseas departments, babesiosis transmitted by vector insects in the French overseas departments, anaplasmosis transmitted by vector insects in the French overseas departments, Bluetongue in endemic or high risk areas.

7.2. Targets on qualification of herds and animals²⁵

Disease^(b): **Brucellosis**

Animal species: **Bovine**

Region ^(b)	Total number of herds and animals under the programme		Targets on the status of herds and animals under the programme ^(c)											
	Herds	Animals ^(d)	Expected unknown ^(d)		Expected not free or not officially free (last check positive ^(e))		Last check negative ^(f)		Expected free or officially free suspended ^(g)		Expected free ^(h)		Expected officially free ⁽ⁱ⁾	
			Herds	Animals ^(d)	Herds	Animals ^(d)	Herds	Animals ^(d)	Herds	Animals ^(d)	Herds	Animals ^(d)	Herds	Animals ^(d)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
N. Ireland	26,000	910,000	0	0	30	1,110	90	3,330	1350	50,000	N/A	N/A	24,530	855,560
Total	26,000	910,000	0	0	30	1,110	90	3,330	1350	50,000	N/A	N/A	24,530	855,560

(a) Disease and species if necessary

(b) Region as defined in the approved eradication programme of the Member State

(c) At the end of the year

(d) Unknown: No previous checking results available

(e) Not free and last check positive: Herd checked with at least one positive result in the latest check

(f) Not free and last check negative: Herd checked with negative results in the latest check but not being "free" or "officially free"

(g) Suspended as defined for the respective disease in Community or national legislation where appropriate or according national legislation.

²⁵

Data to provide for Bovine tuberculosis, Bovine brucellosis, IBR/IPV (AI + embryo units), Ovine and caprine brucellosis (*B. melitensis*), Fanzootic bovine leukosis (EBL), Aujeszky's disease, Maedi/Visna and CAJ:V, IBR/IPV (other types of enterprise), Johnes disease (paratuberculosis).

- (h) Free herd as defined for the respective disease where appropriate in Community or national legislation where appropriate or according national legislation
- (i) Officially free herd as defined for the respective disease where appropriate in Community or national legislation where appropriate or according national legislation
- (j) Include animals under the programme in the herds with the referred status (left column)

7.3. Targets on vaccination or treatment (NOT APPLICABLE)

7.3.1. Targets on vaccination or treatment²⁶

Vaccine(s) and vaccination scheme or treatment and treatment scheme²⁷:

Disease²⁸:

Animal species:

Region ²⁹	Total number of herds ³⁰ in vaccination or treatment programme	Total number of animals in vaccination or treatment programme	Targets on vaccination or treatment programme					Number of young ³⁰ animals expected to be vaccinated
			Number of herds ³⁰ in vaccination or treatment programme	Number of herds ³⁰ expected to be vaccinated or treated	Number of animals expected to be vaccinated or treated	Number of doses of vaccine or treatment expected to be administered	Number of adults ³⁰ expected to be vaccinated	
Total								

(a) Disease and species if necessary

(b) Region as defined in the approved eradication programme of the Member State

(c) Herds equal flocks, or holdings as appropriate

²⁶ Data to provide for Bovine brucellosis, IBR/IBPV (AI + embryo units), Ovine and caprine brucellosis (B. melitensis), Anjeszky's disease, Salmonella pullorum, Salmonella gallinarum, Anthrax, IBR/IBPV (other types of enterprise), Johnes disease (paratuberculosis), Mycoplasma gallisepticum, heartwater transmitted by vector insects in the French overseas departments, babesiosis transmitted by vector insects in the French overseas departments, anaplasmosis transmitted by vector insects in the French overseas departments, Bluetongue in endemic or high risk areas, Rabies, Echinococcosis, salmonellosis (zoonotic salmonella) and agents thereof.
²⁷ Specify the vaccine and the vaccination scheme (which herds and animals, the frequency and the interval of vaccination) with reference to the national legislation.

- (d) Only for Bovine brucellosis and Ovine, caprine brucellosis (*B. melitensis*) and zoonotic salmonella and as defined in the programme

8. Detailed analysis of the cost of the programme²⁹

Costs related to	Specification	Number of units	Unitary cost in £	Total amount in £	Community funding requested (yes/no)
1. Testing					
1.1. Cost of the analysis	Test:Brucella abortus serology (£1,301,138 of total is staff costs)	1,455,000	£1.07	£1,556,850	YES
	Test:Brucella culture (£55,458 of total is staff costs)	1,174	£51.45	£80,402	YES
	Test:Brucella milk sampling (£29,445 of total is staff costs)	35,000	£2.11	£73,850	YES
1.2. Cost of sampling	Blood sample kits	1,500,000	£0.20	£300,000	YES
1.3. Other costs					
2. Vaccination or treatment					
2.1. Purchase of vaccine/treatment	Not applicable				

²⁹ Fixed costs should not be included. All amounts are VAT excluded.

2.2. Distribution costs																											
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Not applicable

2.3. Administering costs	Not applicable					
2.4. Control costs	Not applicable					
3. Slaughter and destruction						
3.1. Compensation of animals		4,560	£993.92	£4,532,275	YES	
3.2. Transport costs		4,560	£19.85	£90,516	Not applicable	
3.3. Destruction costs	Data not available					
3.4. Loss in case of slaughtering	The contract for slaughter of cattle results in the contractor paying a salvage price for the carcasses. The cost of slaughter is built into this and can't be broken down.	Not applicable	Not applicable	Not applicable	Not applicable	
3.5. Costs from treatment of products (milk, eggs, hatching eggs, etc)	Not applicable					
4. Cleaning and disinfection	Data not available					

5. Salaries (staff contracted for the programme only)	Total shown excludes laboratory staff costs detailed at 1.1 above				£5,725,370	Not applicable
6. Consumables and specific equipment	Not Applicable					
7. Other costs						
Disposal of sharps and clinical waste					£20,000	Not applicable
Use of thick lime milk in slurry					£105,000	Not applicable
Salvage					-£399,666	Not applicable
TOTAL					£12,064,397	

From: Martin, Stephen [mailto:Stephen.Martin@dardni.gov.uk]

Sent: Thursday, July 10, 2008 10:32 AM

To: PIAZZA Valentina (SANCO)

Cc: Moghraby, Chetal (FFG); Black, Colette; Butler, Jim; McMaster, Colette; Harwood, Roly; Henderson, Gerald; McAtamney, Grainne P.

Subject: Bovine Brucellosis programme 2009

Importance: High

Dr Piazza

Please find responses to your request for further information below:-

POINT 1 - Introduction of serological testing twice a year.

RESPONSE

Additional testing is carried out in areas of high incidence. The extent of this testing, and the area covered, are based on a veterinary risk assessment. This is because the disease tends to cluster and therefore most of our new outbreaks are identified through risk testing. It would not be effective to carry out additional testing across a whole division when the disease is not present in many areas. Thus in high risk areas, herd tests are scheduled for 3-monthly intervals and sometimes 2-monthly. Herd tests may also be scheduled every 6 months for 3 years in herds that were at risk to a breakdown, following the removal of restrictions from an infected herd. Again this is risk based and has been introduced in recognition of the increased risk of latent infection in these herds.

POINT 2 - In infected herds positive reactor to any tests (SAT, RBT, FC or ELISA) should be deemed infected and slaughtered as soon as possible.

RESPONSE

In infected herds, animals that show readings indicative of infection are removed as reactors as soon as possible. In previously uninfected herds, the results of all tests are interpreted on the basis of the recommendations that came out of the parallel trial that was completed in October 2004. The situation is being kept under review.

Stephen Martin

Department of Agriculture and Rural Development (Northern Ireland)

