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REPORT ON THE  
  
**TASK FORCE MEETING  
OF THE  
“BOVINE BRUCELLOSIS”  
SUB-GROUP**

**Cork, Ireland, 16-17 December 2002**

**REPORT OF THE  
“BOVINE BRUCELLOSIS” TASK FORCE SUBGROUP MEETING**

**HELD IN CORK AND CLONAKILTY, IRELAND, ON 16-17 DECEMBER 2002**

**Participants:** see Annex 1.

**Agenda:** see Annex 2.

### **Day 1**

Comprised a series of presentations by the Irish veterinary authorities and a visit to the Brucella laboratory.

The meeting was opened by a word of welcome from the Chairman of the Sub-Group who also expressed appreciation to the Irish organisers for their assistance in providing the facilities.

#### **1.1 Introduction and Overview (Martin Blake, Deputy Chief Veterinary Officer)**

M. Blake welcomed the subgroup and provided an overview of the demographics, veterinary organisation and history of Brucellosis in Ireland from 1965 to 1992.

Ireland is a country of 70 000 km<sup>2</sup>, divided into 4 provinces and 26 counties, with a human population of 3.9 million. There are 7.2 million cattle on 130 000 holdings, with an average herd size of 55.

The Department of Agriculture and Food is overseen by a Secretary General who reports to the Minister of Agriculture & Food and to two Ministers of State – one having responsibility for Food and Horticulture and the second for Animal Health and Customer Service. The Department consists of 4 divisions (Policy, Agricultural Payments, Corporate Development and Food Safety) with the Veterinary Service (VS) located within Food Safety and overseen by the Chief Veterinary Officer (CVO). The Central VS comprises the CVO, 4 Deputy CVOs (one of whom is the Director of the Veterinary Research Laboratory) and 7 senior veterinary inspectors (“SSVI” or “SSPO”). At a regional level, the country is divided into 4 animal health regions, each under the responsibility of a regional SSVI, with 28 district veterinary offices (DVOs). Each DVO is managed by a DVO SVI who reports to the SSVI responsible for the region. There are 6 veterinary public health regions and 6 regional veterinary laboratories as well as a Brucella-testing laboratory at Cork.

In 1965 a bulk milk survey identified that 12% of 105 000 dairy herds were positive for Brucella. At that time S19 was available on a controlled basis for vaccination of calves. A control programme was initiated the following year, applying compulsory measures only in designated “clearance” areas. The measures included a test and slaughter programme in the ‘clearance’ areas and a voluntary accredited herd scheme in other areas that had a poor uptake. In 1968, S19 vaccination was replaced by 45/20. By 1972, 6 counties in the northwest were declared free of Brucellosis and the clearance areas were extended. By 1980 compulsory serological testing with slaughter of reactors was countrywide and 4 years later vaccination was prohibited. Over the following year 368 herds tested positive, of which 184 were considered to be infected.

During the period 1986 to 1991 the programme was modified to include the MRT for lactating animals, with serological testing of other cattle and all eligible animals in large

dairy herds and depopulation of all infected herds subject to herdowner's agreement. Pre-movement testing was discontinued at this time. By 1991, infection was largely confined to the south-west where 75% of restrictions were located in 4 counties (Tipperary, Cork, Limerick and Galway). During this year 155 herds were restricted for Brucellosis and 74 were depopulated.

### **1.2 Current Role of Task Force and Bovine Brucellosis Subgroup. (Francisco Reviriego Gordejo and Jean Pierre Vermeersch, Commission)**

F. Reviriego explained the background, purpose and operation of the Task Force and associated sub-groups. Later in the programme, J.P. Vermeersch presented summary data and comments on the progress in the member states (MS) with co-financed Brucellosis eradication programme.

- The overall conclusions on the progress were summarised:
  - Inconsistent data over the years
  - Good progress in France
  - Lower herd prevalence and slight improvement in Ireland and Portugal
  - Higher herd prevalence in Italy and Spain
  - Higher herd prevalence and no improvement in Greece and UK (NI)
  - Regional differences existed within MS (where a high prevalence in one region might mask overall progress elsewhere in the country)

The presentation was followed by discussion. J.P. Vermeersch clarified that the data presented were the available data sent by the MS. The subgroup agreed that the historic data were heterogeneous and not appropriate for comparisons between MS.

### **1.3 National Brucellosis Scheme (Garry O' Hagan, SSVI)**

The Scheme is based on a strategy of test and slaughter with the objectives of early detection of infection, rapid removal of infected animals, and herds, reduction of contiguous spread, curtailment of animal movement, prevention of environmental contamination and increased farmer awareness. An area-based approach to eradication is followed, when deemed necessary

Eligible cattle (bulls and females 12 months or older) are subjected to annual serological testing using the SAT and/or indirect ELISA as a screening test and the CFT as confirmatory. Thirty-day pre-movement and post-movement testing is in place, the former compulsory for eligible cattle 12 months or older while the latter is voluntary (although failure to test does affect compensation in the event of a breakdown). Cows are tested at slaughter in 20 abattoirs with 250 000 screened in 2001 (75% of non-reactor cows slaughtered).

Herds with test-positives are restricted, reactors are valued by independent valuers and removed by the reactor collection service in an average period of 2 weeks. The farm is visited by a Veterinary Inspector who conducts an epidemiological investigation using a standardised reporting format, which includes a risk assessment and backward/forward tracing up to 9 months or the last clear test. Based on this, the herd is considered to be 'high' risk or 'low' risk. The former, which are considered infected, usually exhibit within-herd spread, pose a definite risk to the contiguous herds, and are usually depopulated. The latter are usually due to non-specific infection (NSI), typically have 1

or 2 low-grade reactors, are negative to bacteriological culture, have a disease-free history and are based in low incidence areas. They are not depopulated and maybe derestricted after a clear 60 day test.

Herds within 150m of a breakdown are identified and are subject to one test (NSI breakdown) or 3 to 4 tests involving at least one calving cycle (infected breakdowns). Such herds are identified using computerised mapping (Land Parcel Identification System - LPIS) data that identifies all lands used by herds within 1 to 1000m from a specified herd.

The following additional control measures were introduced between 1998 and 2002:

- Pre-movement test (Feb. 1998) – see above
- Rapid depopulation policy (2000) – 273 of 550 test-positive herds in 2001 were considered to be infected and were depopulated.
- Cull-cow monitoring (1999) – see above
- New blood (2000) and milk (2001) screening tests
- Slurry treatment (2000/2001) – applies to all depopulated herds; lime is added to slurry tanks to increase pH before slurry can be spread on to fields.
- Extended rest periods (2000) – up to 10 months based on risk assessment; depopulation grants provided.
- Standardised epidemiological investigations.
- Anti-fraud measures by the Investigation Unit.

Significant reduction in disease was observed in the period between 1998 and 2002 although some obstacles remain including latent carriers, dealers' activities, temporary housing of cattle from different herds, cross-border spread and fragmentation of farms. The Department aims to continue the current programme, as they feel eradication is possible without the need for vaccination (although strategic use of RB51 vaccination may be considered), but with greater emphasis on environmental contamination and mechanical spread.

During the subsequent discussion, M. Blake commented that during the years 1992 to 1998, the incidence of Brucellosis increased, attributed to changes in quotas and subsidies. In particular, the 1992 quota system for suckler cows increased cattle movement from the south west to the north west and the 1994 cessation of suckler premium for Friesian cows led to significant movement around the country.

#### **1.4 Disease Statistics and Diagnostics (Michael Sheahan, SVI)**

After giving an overview on the diagnosis scheme including the serology, the milk Elisa, bacteriology and trials with Brucellin skin testing, M. Sheahan presented a series of charts showing test and disease statistics for the period 1996 to 2002. These showed that disease incidence peaked in 1998 and has steadily reduced since then. For example:

- The number of restricted herds on 01 December was 557 in 1998 and 197 in 2002.
- The number of annual restrictions was 1017 in 1998 and 400 in 2002.
- 310 herds were depopulated in 1998 and 197 in 2002.

The number of Brucella-positive fetuses identified by the laboratories increased from 11 in 1993 to a peak of 108 in 1999 before reducing to 28 in 2001.

On average, 27 herds per month were milk Elisa positive in 2002, including repeat positives. 53% of these were confirmed on serology. Some false positive milk Elisa results were attributed to the delays in the delivery of the milk samples to the testing laboratory. Measures to reduce these delays have been put in place.

### **1.5 Animal Movement Control (Peter Maher, VI)**

Cattle are double-tagged at birth with an animal-unique number that includes the county and herd of origin. Cattle identity cards (passports) are issued by an agency (Cattle Registration Agency) and contains details of the animal's identity, its birth date and dam tag number, eligibility for EU premiums, TB and Brucella testing history and movement history. The passport must accompany every animal when it is moved to any new location.

Two central computerised databases are used ("Cattle Movement Monitoring System" – CMMS and "Bovine Tagging and Registration - BTR) to capture details of cattle births, movements and deaths at key data collection points:

- The calf birth registration agency receives applications from farmers to register their animals on the database and issue passports. The system includes a range of primary and secondary validation checks to ensure accuracy of information. Animals that fail the validation checks are not issued with passports and therefore cannot move from their farm of origin. Keepers must correct the information to the satisfaction of the Competent Authority before the animal will be registered and a passport issued.
- The movement notification agency captures movement data from farm to farm movements, private sales and on-farm deaths and the movement of such dead animals to knackeries. Markets notify CMMS electronically with post-movement notifications. Pre-clearance is required 'live' on CMMS in the case of all animals entering the food chain at abattoirs and leaving the country via live exports. Again, automatic validation checks are included.

A National Census called 'Herd Reconciliation' was conducted in 2001 to ensure that the CMMS database was fully populated. The system is used to provide information and assurance regarding traceability, and in slaughter and beef premium payments to farmers. It is a key element in the National Beef Assurance Scheme, a compulsory scheme being introduced to provide assurances regarding the traceability of Irish cattle products

### **1.6 Farmer Compensation (Ciaran Smith, Assistant Principal, ERAD)**

The compensation system, a non-statutory scheme, underwent significant changes in 2001. Prior to this, it consisted of a series of grants including a reactor grant (fixed value based on age and production category of animal), income supplementation (if > 10 cattle removed, up to first 100 cattle), a depopulation grant (depopulation voluntary) and a hardship grant (for non-dairy farmers with cattle restricted). However, following prolonged discussion with the farming industry a new on-farm market valuation scheme was introduced in early 2001. This replaced the reactor grant with a compensation system, using a team of independent valuers to value cattle on an individual basis on the farm. The other three grants were retained.

Under the new system, compensation is capped at a maximum of € 540 per animal with the only exception being a maximum of € 175 for 1 pedigree stock bull per herd. An appeals and arbitration procedure is included with specified deadlines to facilitate rapid removal of reactors. Penalties, ranging from 5% to 100% of the monies paid, are included for a range of breaches of animal health or legislative requirements.

In 2000, brucellosis expenditure was €9.5 million, with the EU contribution being €5 million. This compares to €8.6 million and €1.9 million respectively in 1996. During 2001, 1 508 herds were valued, with 83 being appealed and 13 going to arbitration. The equivalent data for 2002 are 7 546, 134 and 21 respectively.

### **1.7 Visit to National Brucellosis Laboratory, Cork**

The laboratory, responsible for all Brucella testing in Ireland, processes approximately 5 million samples per annum and has a staff complement of 59, most of whom are serology assistants.

Private veterinary practitioners undertake serology testing and samples, accompanied by test sheets, are sent by post to the laboratory. On receipt at the latter they are sorted, with priority given to pre-movement samples, coded and then prepared for processing.

Prior to 2000, all serology samples were screened with the serum agglutination test (SAT) and confirmed with the complement fixation test (CFT). An indirect Elisa test was introduced in 2000 using pooled samples of 8 per well. However, difficulties were experienced using this technique and the system was replaced by a single dilution (1/14) micro-SAT (MSAT) test. Samples that show agglutination at this dilution are testing with both the Elisa and CFT and a positive result to the latter is taken as confirmatory. However, the system of expressing the results of MSAT by dilutions instead of Units in place in the National Brucellosis Laboratory is considered unsatisfactory.

In 2002 the milk ring test (MRT) was replaced by the whey Elisa and approximately 290 000 are tested per annum.

## **Day 2**

The second day comprised visits to a farm, registration agency and local divisional veterinary office (DVO), presentations from field veterinary inspectors and concluding discussions with the Irish Veterinary Service management.

### **2.1 Visit to local dairy farm**

The group visited a self-contained pedigree dairy herd of 150 cattle, toured the premises and discussed a range of issues with the herd owner and his assistants.

### **2.2 Visit to Cattle Registration Agency, Bandon, Co. Cork.**

The group visited the premises of the agency responsible for the registration of all cattle births in Ireland. Farmers must register the birth of a calf within 27 days of birth and the agency processes between 2 000 (September) and 35 000 (April) applications each day. Approximately 10% of applications are returned at first screening to the applicant due to discrepancies on the form or a failure in the information supplied to meet the validation criteria e.g. calf born to dam associated with a calving within the previous year. The agency has a target of 2 days in which to issue a passport after receipt of a correct application.

The centre also processes applications for movement of cattle for between-herd movement and movement to export points. If movement cannot be confirmed due to discrepancies in the applicant's information or data held on the central database, the animal is left in the vendor's herd.

On-farm deaths are reported in a similar way to on-farm births; approx. 180 000 per annum are notified.

### **2.3 Overview of Brucellosis in South/West region (Pat Flanagan, Regional SSVI South/West)**

The region comprises 7 DVOs, each overseen by a SVI. The area is fertile with intensive dairy farming the most significant farming activity. Historically, brucellosis has been endemic although good progress was made in the 1980s using vaccination, enhanced testing (including limited use of Cunningham's Anamnestic test) and later, a test and slaughter policy. However, incidence increased in the 1990s, peaking in 1998 and prompting enhancements to the programme e.g. pre-movement testing, extended restrictions, intensive/extended contiguous herd testing and earlier herd depopulation. These measures resulted in a decrease in incidence with 130 herds being depopulated in 2001 and 104 in 2002.

### **2.4 Brucellosis in Cork West (Eilish O'Brien, VI Cork)**

This divisional area, comprising mostly intensive dairy farming includes approximately 300 000 cattle in 4 800 herds. Disease was concentrated in 3 areas with sporadic outbreaks elsewhere. In 1999 the number of herd restrictions peaked at 55 but additional control measures and raising public awareness resulted in significant improvements. In 2002 for example, 5 herds were depopulated from a total of 12 herds in which reactor cattle were identified. The following challenges to eradication were identified: the highly contagious nature of the disease, its ability to spread beyond immediate neighbours by various means, persistence of infection, lack of vaccination, equivocal farmer co-operation, fragmented nature of farms and risks associated with re-stocking.

### **2.5 Demonstration of computer-based testing and mapping**

The group was shown the computer programmes used to assess the test status of herds and cattle, and the programme used to map herds contiguous to a specified herd. The latter allows a local VI to enter a herd number and obtain a map showing all land parcels used by neighbouring herds, based on information held on a centralised database and updated through the premium (Area Aid) system.

## **Final Meeting – Conclusions and Recommendations**

### **3.1 Linking of the databases on animal health with registration & movement**

- Conclusion

At present, the CMMS database used in bovine identification and tracing is not directly linked with the Animal Health database that holds information pertaining to the sanitary status of the herds.

- Discussion and Recommendations

It is recommended that the databases on animal registration and movement and animal health be directly linked. This will provide extra benefit to disease control and would be an excellent epidemiological tool, allowing a more integrated sanitary control at different operational levels.

The Irish authorities, who have already envisaged this link, expect that this could be achieved in 1-2 years.

### **3.2 Epidemiology**

- Conclusion

Comprehensive information was provided to the members of the TF sub-group regarding brucellosis trends in Ireland. A significant reduction in disease incidence was observed in the period 1998 to 2002 and the official authorities are evaluating progress and identifying potential obstacles to eradication.

- Recommendation and discussion

It is recommended that the descriptive studies be extended to include all aspects of the programme e.g. repeat-breakdown rate, source of breakdowns, brucellin test data, and that these are complemented by analytical epidemiology. This should facilitate assessment of the risk factors and help define better strategies for the implementation of the control measures.

### **3.3 Quality control in the diagnostic laboratory**

- Conclusion

The effort and workload of the CVL at Cork in processing and analysing 5 million samples a year is impressive. In the same laboratory premises, technical staff are involved in the production of antigens for the diagnostic tests, in using them for routine procedures and in comparative laboratory trials.

- Recommendation and discussion

In order to improve the quality assurance of reagents and reference tasks, it is recommended that the laboratory embarks for an accreditation policy. In the meantime it is advised to separate people and spaces should be used for performing the technique and for the production and the control of reagents.

### **3.4 Testing regime**

- Conclusion

Serological testing involves a single-dilution MSAT for screening and the iElisa and/or CFT for confirmation. For milk, the whey Elisa is used, having replaced the MRT in 2002. Research on new testing methods and assays as well as evaluation of the present ones has been done by CVL, Cork. A pooled iElisa was tested for serological screening but was rejected due to problems associated with pooling of samples. The brucellin skin test has also been evaluated in comparative trials but conflicting results were obtained.

- Recommendation and Discussion

The testing strategy should be evaluated and adapted to the epidemiological situation in order to allow a precise and proper detection of infected animals. It is considered that the Brucellin skin test could be useful if a more specific diagnosis test is needed. Where one or more positive animals are detected in the screening test in an infected area, the other (negative) samples in the herd should be investigated preferably using a more sensitive method.

### **3.5 Mechanical vectors and other host species**

- Conclusion

In the epidemiological investigation of bovine brucellosis outbreaks, mechanical carriers like foxes and dogs have been considered. Some serological testing of sheep is undertaken in Ireland but this is not related to flocks managed alongside positive bovine herds.

- Recommendation and Discussion

Sero-surveillance of all contact animals of susceptible species (especially ruminants) should be envisaged in the risk areas and sanitary measures taken accordingly. This should be taken into account especially in the areas where it is considered a relevant risk factor (including the situations with re-occurrence of breakdowns). Emphasis should be put on the tracing and identification on the source of contamination. In this respect, it has been said that movement of animals between parcels could be an important risk factor.

### **3.6 Compensation for sanitary slaughter**

- Conclusion

Presently, the extent of cooperation between producers and the veterinary authorities is very high regarding the sanitary slaughter of animals or even depopulation of the herd. The Authorities implemented in 2001 significant changes in the compensation system based on an on-farm evaluation system and market-related compensation for each animal.

- Recommendation and Conclusion

The new-implemented system should have a monitoring system in place to confirm its fairness and avoid fraud.