



Better Training for Safer Food *Initiative*

João Niza Ribeiro

BTSEF

Better Training for Safer Food is an initiative of the European Commission aimed at organising an EU training strategy in the areas of food law, feed law, animal health and animal welfare rules, as well as plant health rules.

2nd Quarter 2017



European
Commission

Supporting Material to Case Studies

Module 5.3

Introduction to four diseases and their control strategies (bTB, FMD, *Brucellosis mellitensis*, BTV)





European
Commission

Animal Population in the EU

Livestock numbers per EU Member State, 2014

(http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_production_-_animals)

	Bovine animals	Pigs	Sheep (*)	Goats (*)
EU-28	88.39	148.31	83.13	10.58
Belgium	2.48	6.35	:	:
Bulgaria	0.56	0.55	1.34	0.29
Czech Republic	1.37	1.61	:	:
Denmark	1.55	12.71	:	:
Germany	12.74	28.34	1.60	0.12
Estonia	0.26	0.36	:	:
Ireland	6.24	1.51	3.32	0.00
Greece	0.66	1.05	9.07	4.25
Spain	6.08	26.57	15.43	2.70
France	19.25	13.29	7.17	1.27
Croatia	0.44	1.16	0.61	0.06
Italy	6.13	8.68	7.17	0.94
Cyprus	0.06	0.34	0.32	0.24
Latvia	0.42	0.35	:	:
Lithuania	0.74	0.71	0.12	0.01
Luxembourg	0.20	0.09	:	:
Hungary	0.80	3.14	1.19	0.07
Malta	0.01	0.05	0.01	0.00
Netherlands	4.17	12.07	1.07	0.44
Austria	1.96	2.87	0.35	0.07
Poland	5.66	11.27	:	:
Portugal	1.55	2.13	2.03	0.38
Romania	2.07	5.04	9.52	1.42
Slovenia	0.47	0.28	:	:
Slovakia	0.47	0.64	0.39	0.04
Finland	0.91	1.22	:	0.00
Sweden	1.44	1.47	0.59	0.00
United Kingdom	9.69	4.49	23.03	0.00
Iceland	0.07	0.04	:	:
Montenegro	0.09	0.02	0.20	0.03
FYR of Macedonia	0.24	0.17	:	:
Serbia	0.92	3.24	1.75	0.22
Turkey	14.24	:	31.12	10.35

(*) Figures on sheep population are due only by 14 EU Member States. The EU aggregate is estimated on their sum.

(†) Figures on goat population are due only by 5 EU Member States. The EU aggregate is estimated on their sum.

The diseases can be paired according to whether present in the territory or absent/emerging and according to the control strategy

Detailed instructions for the group work are presented in the next presentation, but the allocation of disease to working group is:

- bTB – Bovine Tuberculosis (**Group ...**)
- BTV – Bluetongue virus (**Group ...**)
- FMD – Foot and Mouth Disease (**Group ...**)
- Brucellosis melitensis - from small ruminants (**Group ...**)



European
Commission

Bovine tuberculosis

BTB



bTB – Bovine Tuberculosis

1. Disease characterization
 - The agent, the disease, epidemiology, occurrence and importance in Europe
2. Control principles
 - Epidemiology of transmission, detection, EU policy towards control and eradication
3. Legal base for bTB in the EU / European strategy
 - Legal basis to eradication, food safety, programs development and assessment, financing

Agent and disease

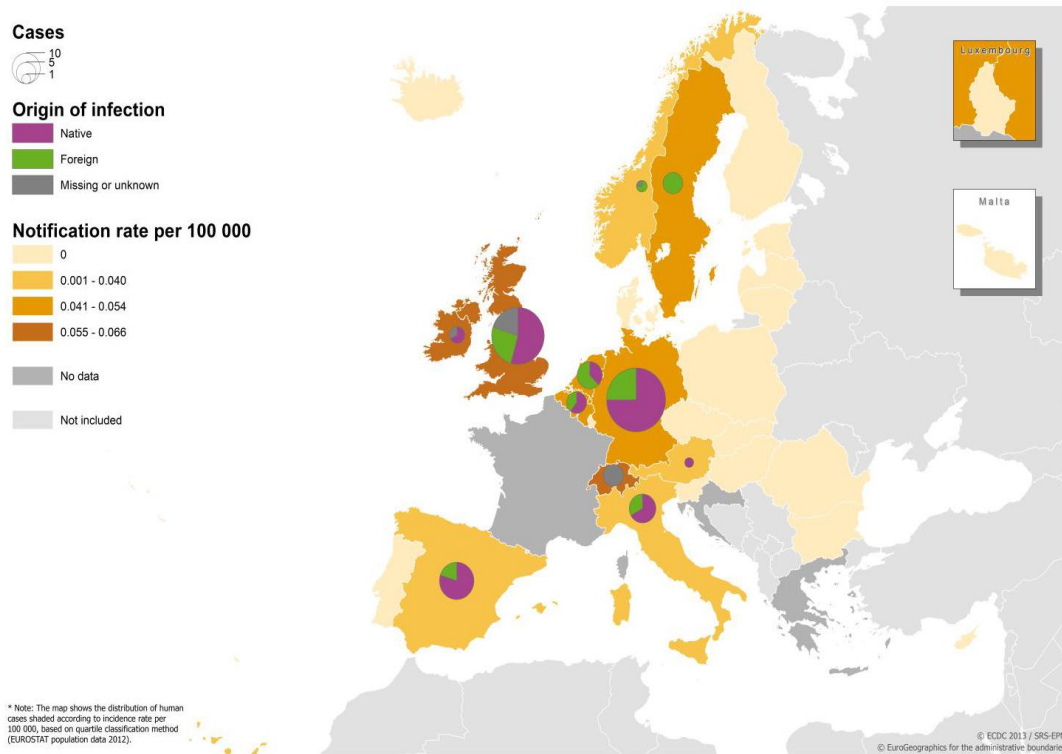
- *Mycobacterium bovis* is part of the *M. tuberculosis* complex which is a zoonotic complex of mycobacterial that causes human tuberculosis.
- *M. bovis* causes tuberculosis in bovine and many other species.
- Characteristic tuberculous lesions occur most frequently in the lungs and the retropharyngeal, bronchial and mediastinal lymph nodes. Lesions can also be found in the mesenteric lymph nodes, liver, spleen, on serous membranes, and in other organs
- It infects mainly by aerosol inhalation but ingestion may also work as an infection route. The agent is very resistant in the environment for long periods.

Incidence of *M. bovis* in humans

- Until the first half of the twentieth century *M. bovis* was responsible for 20% of human tuberculosis, in Europe and the United States.
- The human main route of exposure to *M. bovis* is through ingestion of raw milk and meat of infected cattle, although the respiratory route is also possible.
- The second form of exposure was due to professional activity primarily related to livestock farms and slaughterhouses.
- Control the food chain which introduced mandatory pasteurization of milk consumption and sanitary inspection effectively reduced these routes of exposure. Eradication programs started after World War II contributed to effectively reduce further human exposure.
- In the EU the risk of new cases of human *M. bovis* tuberculosis:
 - h is 1/3.000.000 (0.03/100.000)
 - 70% are native inhabitants of the country
 - between the native inhabitants risk is twice as high in non-OTF (84.6% vs 45.4%)



Figure TB1. Notification rates and origin of infection in tuberculosis due to *M. bovis* in the EU/EFTA, 2012



Note: The map shows the distribution of human cases shaded according to incidence rate per 100,000 based on quartile classification method (EUROSTAT population data 2012).



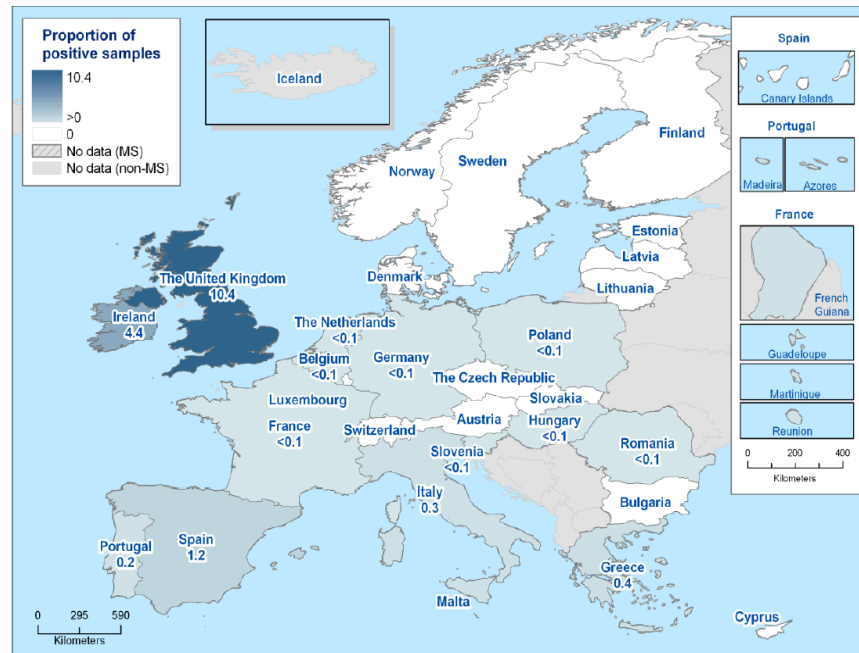
European
Commission

M. bovis in Europe in 2012



EU summary report on zoonoses, zoonotic agents and
food-borne outbreaks 2012

Figure TB3. Proportion of existing cattle herds infected with or positive for *M. bovis*, country based-data, 2012





European
Commission

M. bovis in Europe in 2011



EU summary report on zoonoses, zoonotic agents and
food-borne outbreaks 2011

Figure TB4. Proportion of existing cattle herds infected with or positive for M. bovis, 2006-2011



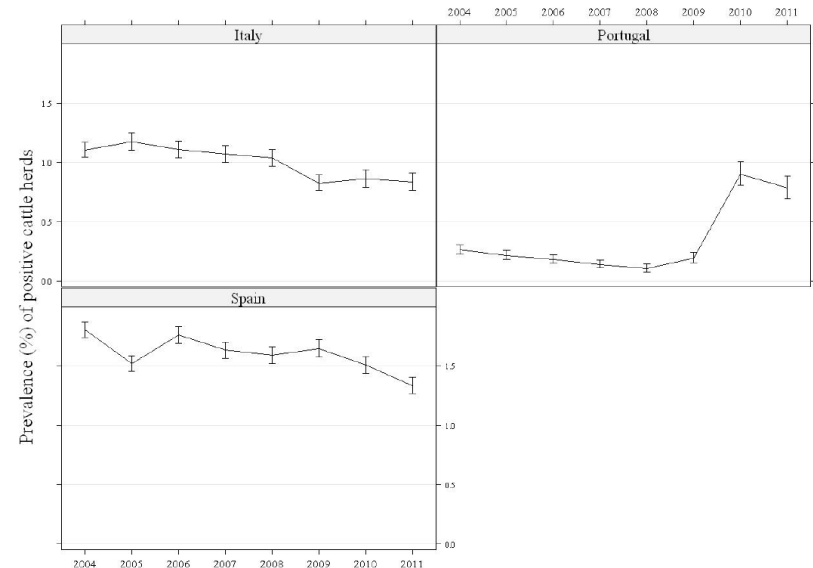
Epidemiology

- Infection mainly through the respiratory tract (by aerosol), but digestive infection is also possible especially through milk in young animals (vertical transmission)
- Incubation vary but may be long; excretion from open lesions through the nasal mucous, milk, feces, urine
- Once infected the disease may last long periods before death (under natural circumstances) inevitably arrives. The infected animals become shedders, usually intermittent
- Susceptible hosts, besides man, are potentially all mammals, but several wild reservoirs (badgers, wild boars, dears) have been established in some countries of Europe as relevant in the maintenance of the disease and are considered responsible for undermining the success of eradication

Case of a particular country of Bovine Tuberculosis

- The specific case for Portugal denotes particular incidence and difficulty in eradication on regions populated by wildlife and where cattle is grazed during all year.
- Other countries like UK, Ireland, France, Germany also have specific cases.

Figure TB5. Prevalence and 95% CI for *M. bovis* test-positive cattle herds, at MS level, in three co-financed non-OTF MSs, 2004-2011¹



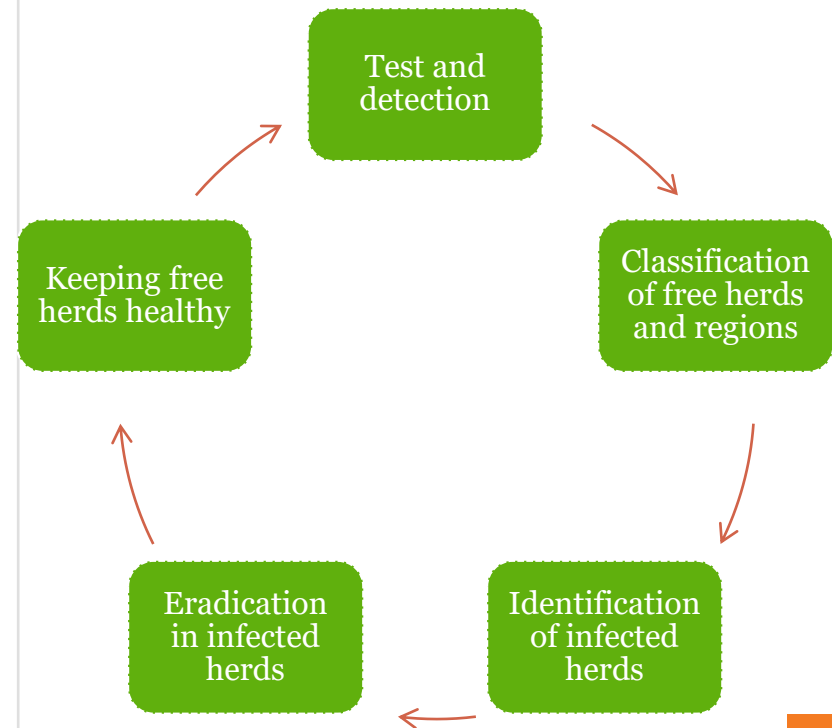
Detection

- Identification of the agent
 - Isolation through selective media of mycobacterium followed by cultural & biochemical tests or DNA (PCR). Confirmatory.
 - Identification, microscopic examination of acid-fast bacilli. Presumptive.
- Cell-mediated immune response
 - Tuberculin Test or Skin Test (delayed hypersensitivity test)
 - γ -interferon Test
- Antibody response
 - Indirect ELISA Tests

Flowchart of bTB eradication in Europe

The key concept is that every MS needs to achieve the TBOF status

1. The percentage of bovine herds confirmed as infected with tuberculosis has not exceeded 0.1% per year of all herds for 6 consecutive years, and at least 99.9% of herds have achieved TBOF status each year for 6 consecutive years, the calculation of this latter percentage to take place on 31 December each calendar year.
2. Each bovine animal is identified in accordance with community legislation.

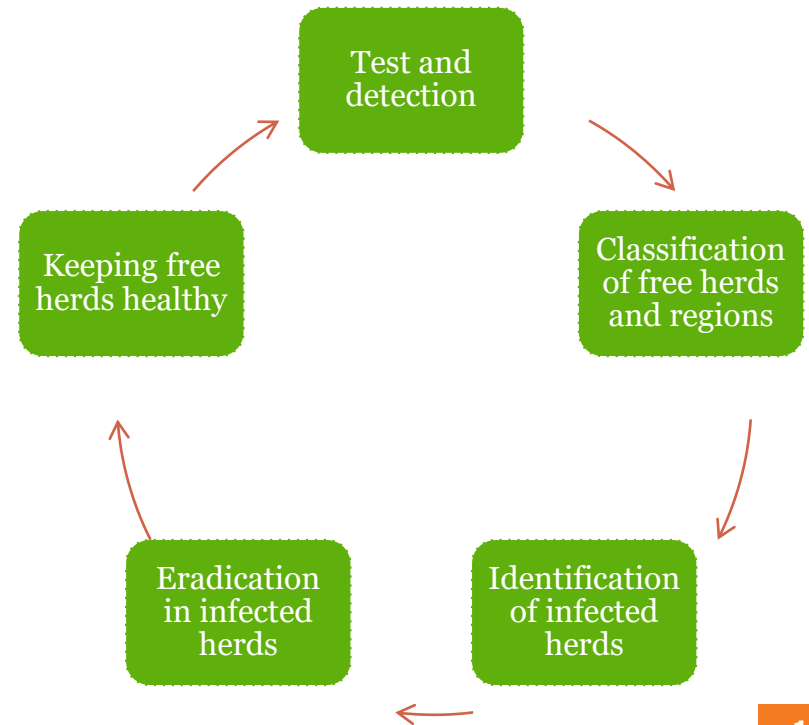


Flowchart of bTB eradication in Europe

The key concept is that every MS needs to achieve the TBOF status

3. All bovine animals slaughtered are subjected to an official post-mortem examination; the procedures for suspension and withdrawal of officially tuberculosis-free status are complied with.

- Control principles: Detection, Eradication, Classification, Biosecurity
- Classification: TBOF; Officially free herd, Non Officially free herd
- Eradication measures: testing, slaughtering t+ animals/stamping infected herds, herd retest periodically (periodicity adjusted to the risk).



Legal base for bTB in Europe

- Directive 64/432/EEC as amended and updated provides the rules for herd, regions and countries classification, for animal testing and establishes the pre-movement test for the movement of living animals in non TBOF countries.
- Directive 64/433/EEC established the principles for post-mortem inspection at the slaughter houses. Regulation (EC) 854/2004 reinforces. Regulation (EC) 853/2004 establishes rules to produce and place in the market raw milk, heat treated milk and milk-based products.
- Council Decision 2009/470/EC defines de rules for financing eradication programs in particular specifies the need for the presentation of annual or multiannual eradication programs towards amongst others, bovine tuberculosis.



European
Commission

Bluetongue

BTCS



BTV – Bluetongue virus

1. Disease characterization

- The virus
- Pathogeny and lesions
- Incubation infectiousness
- Epidemiological situation – World, Europe
- Economic impact of BTV occurrence

2. Control principles

- Entomosurveillance and clinical detection;
- Delimitation of restricted areas and movement restrictions
- Vaccination

3. Legal base for BTV in the EU / European strategy

Characterization

- Bluetongue virus (BTV) infection involves domestic and wild ruminants such as sheep, goats, cattle, buffaloes, and various other *Artiodactyla* as vertebrate hosts.
- BTV is a member of the *Orbivirus* genus of the family *Reoviridae*, one of 20 recognised species or serogroups in the genus. The BTV species, or serogroup, contains 24 recognised serotypes.
- It's a non-contagious, insect borne viral disease transmitted by midges from the *Cullicoides* species.
- Reemerged with particular importance in Europe in the last 15-20 years.

Characterization The vector

- BTV is transmitted by adult female *Culicoides* (Diptera: *Ceratopogonidae*), which blood-feed to obtain protein for the production of eggs.
- Several species belonging to the *C. pulicaris*, *C. obsoletus* and *C. imicola* have been implicated in successful transmission of different BTV.
- There are host-agent (midge/virus) relations and dependencies. Not all *Culicoides* are suitable to all BTV serogroups

[Climate change and the recent emergence of bluetongue in Europe.](#)

Bethan V. Purse, Philip S. Mellor, David J. Rogers, Alan R. Samuel, Peter P. C. Mertens & Matthew Baylis. *Nature Reviews Microbiology* 3, 171-181. 2005

Geographical areas showing appropriate conditions for the vectors to settle and to survive are at higher risk. There are clear limitations for some species to adapt to some regions. Detailed studies provide relevant information on this critical subject for BTV control.

Characterization

The vector and infection

Bluetongue virus (BTV) is transmitted between its ruminant hosts by the bites of the vector and is known that adverse climatic conditions during winter can kill the adult vectors.

Under such conditions the virus should be unable to persist.

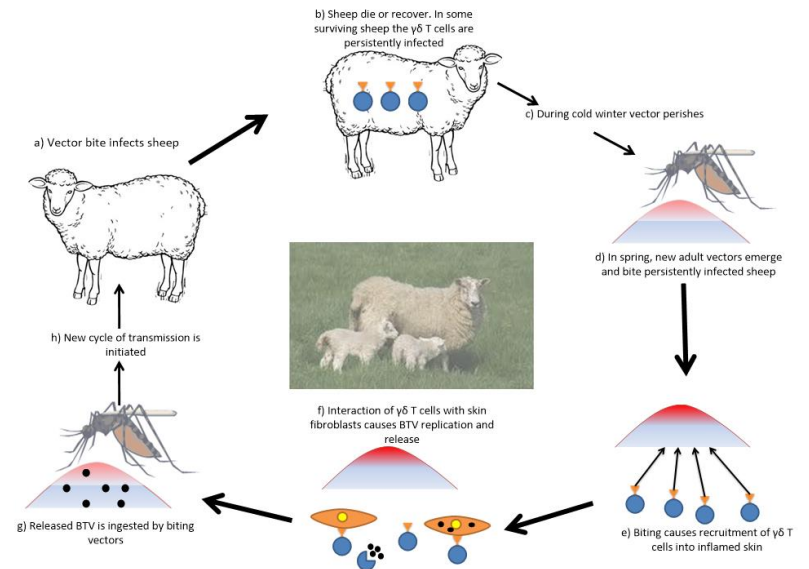
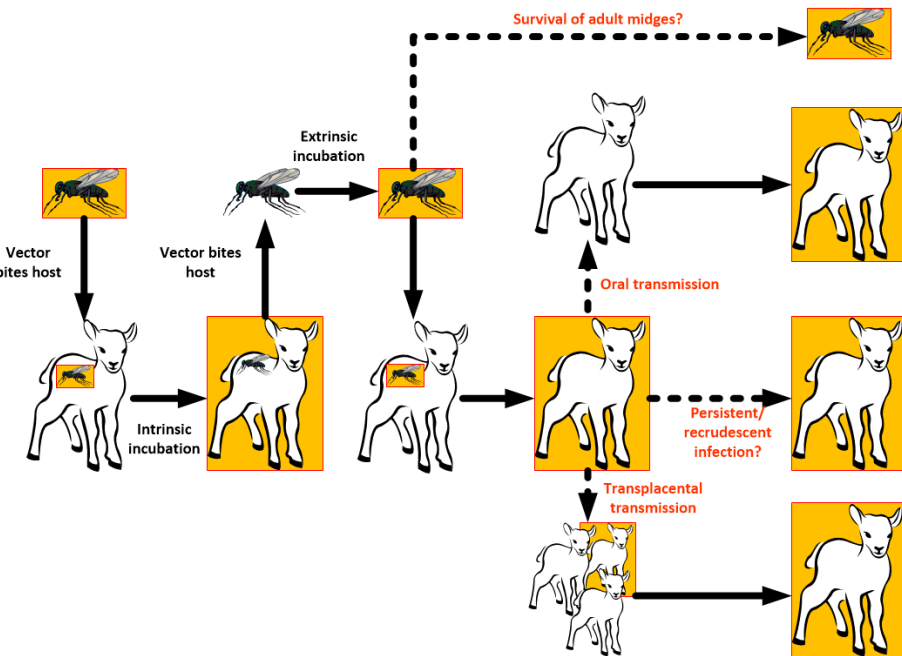
Epidemiological evidence indicates that, in the recent BTV epidemics in Europe, the virus has persisted over several years even in locations where adult vector populations are small or absent

A novel over-wintering mechanism for this pathogen has been postulated through which the virus could survive in the skin of persistently infected animals, during the vector-free winter months and infect the vector *Culicoides* midges in the next spring thus initiating a new transmission cycle.



European
Commission

Characterisation



Characterisation of the disease – part 1

- Infection in cattle mostly has not resulted in clinical signs, with the recent exception of BTV8 infection of cattle in Europe. Cattle are particularly significant in the epidemiology of the disease due to the prolonged viraemia in the absence of clinical disease.
- Clinical signs range from mild to severe and vary not only between species but between breeds and within the flock or herd.
- Clinical signs of BT disease are mainly attributable to vascular permeability and include fever, hyperaemia and congestion, facial oedema and haemorrhages, and erosion of the mucous membranes.

Characterization of the disease – part 2

In mild cases of the disease, a transitory hyperaemia and slight ocular and nasal discharge may be observed.

In very severe cases the tongue may show hyperaemia, become oedematous and protrude from the mouth, or become cyanotic. Hyperaemia may extend to other parts of the body, particularly the coronary band of the hoof, the groin, axilla and perineum.

In severe cases there is additionally skeletal and cardiac muscle degeneration. Wool breaks may occur. Sheep may become lame as a result of laminitis and skeletal myopathy.

Characterization - Costs of the disease

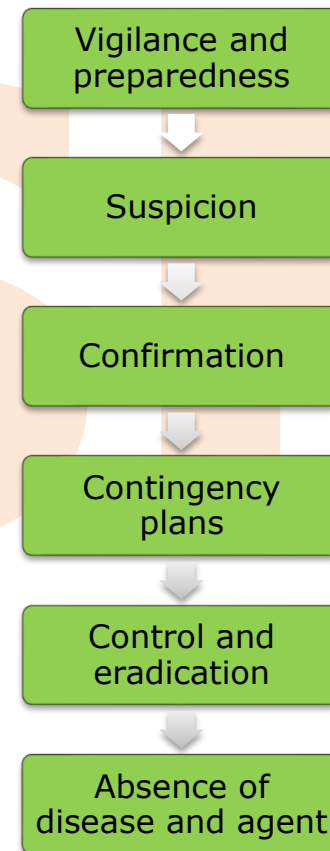
Detailed information about the economical impact of BTV 8 in ruminants was gathered in 2007 outbreak in the Netherlands.

Although generalization to other countries and other serogroups can hardly be carried on straightforward, the study shows that the economic impact of the virus emergency in naive areas can be massive.

BTV: from contingency to eradication

Emergency Interventions and Control and Eradication Programs

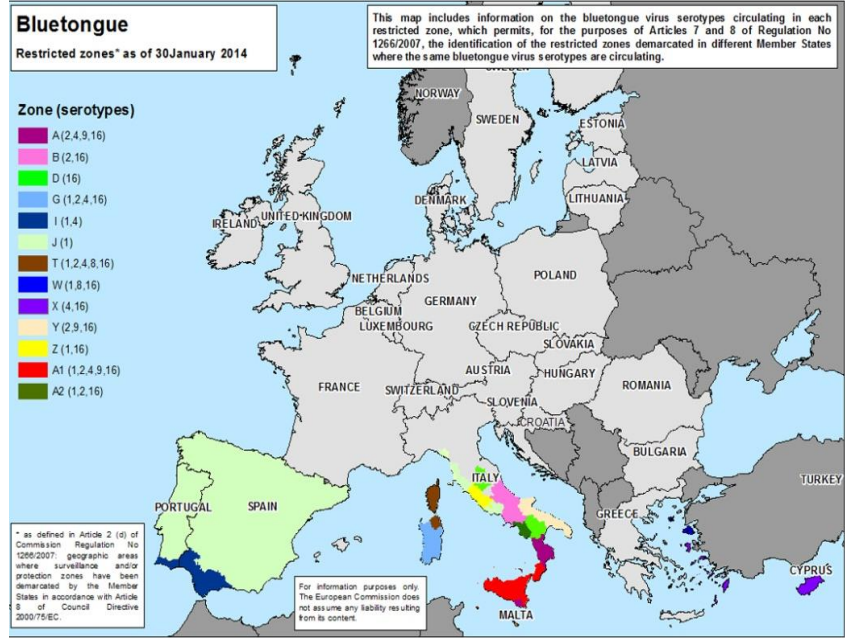
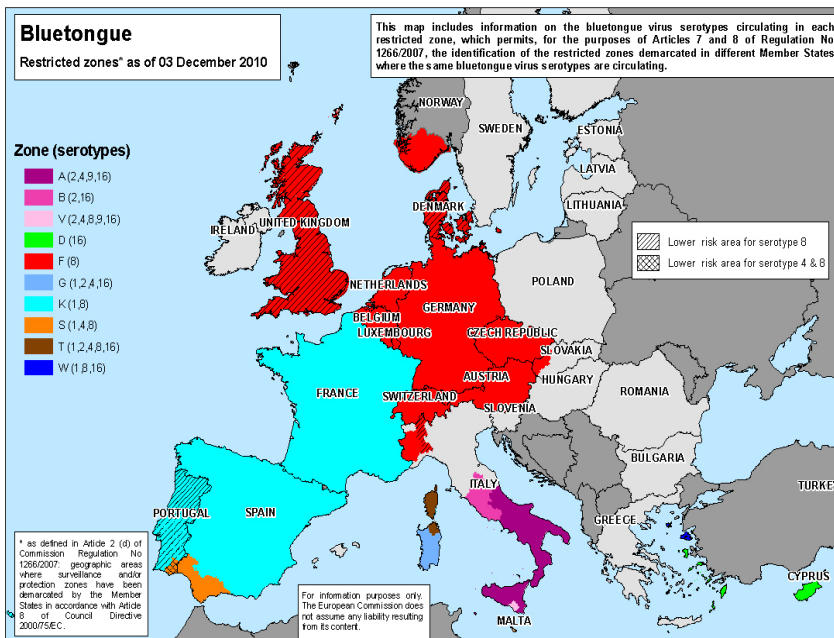
- Definition of restricted zone
 - 20 km zone around the outbreak
 - Protection zone: 100 km radius
 - Surveillance zone + 50 km radius
- Limit animal movements
 - Within the restricted zone to and from the protection zone
 - To outside of the restricted zone and across a restricted zone
- List restricted zones
 - Two years without BTV circulation before upgrade a restricted zone to a non restricted
- Vaccination programs approved by the Commission





European Commission

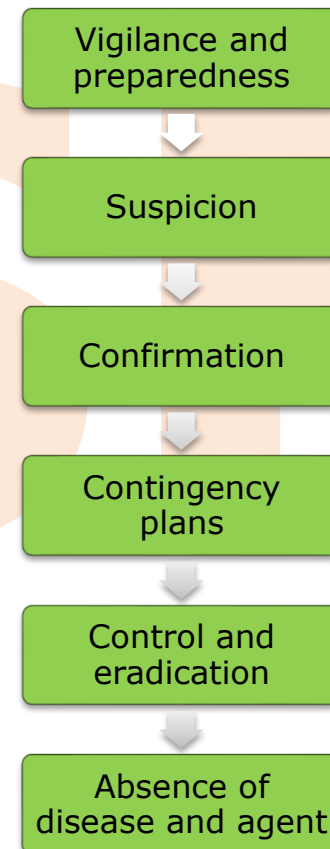
Control programs; environmental factors; vectors presence; animal density, movements and susceptibility contribute to reshape BTV map in Europe collected from the Commission website December 2010 - January 2014



BTV: from contingency to eradication

Emergency Interventions and Control and Eradication Programs

- Monitoring inside the restricted zones
 - Serological tests of sentinel animals
 - Entomological monitoring
- Surveillance outside the restricted zones
 - In all MS at risk
 - Serological vigilance
 - Entomological vigilance
 - Passive clinical surveillance
- Prevent movement of unprotected animals between different restriction zones
- Notify situation to BT-Net
- Detection
 - Serological detection of antibodies by ELISA tests and seroneutralization (SN)



Assessing the Economic Impact of Different Bluetongue Virus (BTV)
Incursion Scenarios in Scotland
Technical Report. 2008
Commission Number : CR/2007/56
Project contractors: SAC on behalf of EPIC

Legal base for Bluetongue in Europe

- Directive 2000/75/EC lays down control rules and measures to combat bluetongue in the Community, including the establishment of protection and surveillance zones and a ban on animals of the susceptible species leaving those zones.
- Regulation (EC) 1266/2007, it aims to improve harmonisation at Community level of the rules on the control, monitoring, surveillance, and restrictions on movements of susceptible animals, excluding wild animals, in relation to bluetongue as they are of fundamental importance for safe trade in susceptible farmed animals moving within and from restricted zones, with the aim of establishing a more sustainable strategy for the control of bluetongue.
- Decision 2008/655/EC approving the emergency vaccination plans against bluetongue of certain Member States and fixing the level of the Community's financial contribution for 2007 and 2008, amended by Decision 2009/19.
- Council Decision 2009/470/EC defines de rules for financing eradication programs in particular specifies the need for the presentation of annual or multiannual eradication programs towards amongst others, bovine tuberculosis.



European
Commission

FMD – Foot and Mouth Disease

BTIS



FMD – Foot and Mouth Disease

1. Characterization

- The virus, Disease, Epidemiology

2. Control

- Keep out policy, Preparedness, Surveillance, Control and Regaining freedom from disease

3. Legal base for FMD in the EU / European strategy

The agent and word distribution

- FMD is caused by a non-enveloped *Aphthovirus* of the family *Picornaviridae*, existing in seven distinct serotypes of FMD virus, namely, O, A, C, SAT 1, SAT 2, SAT 3 and Asia 1, most of them with many more subtypes.
- Infection or vaccination with one serotype, or in some cases even a different sub-type of the same serotype, does not confer immunity against another.
- Low infectious dose, excretion starts before onset of disease: pigs (+++), bovine (++) , small ruminants (+).

The disease

- It is widely distributed throughout the world.
- FMD is not dangerous to humans, but has a great potential for causing severe economic losses in susceptible animals.
- The severity of clinical signs varies with the strain of virus, exposure dose, age and breed of animal, host species, and degree of host immunity.
- Signs can range from mild or unapparent to severe.
- Morbidity may approach 100%. Mortality in general is low in adult animals (1–5%) but higher (myocarditis) in young animals (20% or higher). Recovery in uncomplicated cases is usually about two weeks

Epidemiology

- Foot-and-mouth disease (FMD) is a highly contagious, usually non-fatal viral disease. Susceptible animals are artiodactyls either domestic and wild cloven-hoofed animals. Wild animals (buffaloes, deer, wild boars) can play a role in disease maintenance and spreading.
- The infectious period starts before clinical onset of disease (2 – 4 days)
- Sources of the virus: infected diseased and recovered animals; breath, urine, milk, saliva.
 - Vaccinated and exposed animals in which FMDV persists can also be a source of virus.
 - Some animals recovered from the disease may remain carriers (more than 28 days) being responsible for the maintenance of the virus in a territory. The rates of carriers in cattle vary from 15–50%.
- Transmission: the virus is spread easily; direct and indirect contact (by animated and non-animated vectors), ingestion, inhalation; may also spread airborne over long distances.

Control principles

- Keep out FMD
 - Border control from third countries
 - Sound import policy of live animals and animal products with restrictions imposed according FMD status of third country
- Disease preparedness
 - Strong veterinary systems
 - Learn from experience
 - Up-dated legislation
 - Crisis units, emergency teams, vaccine banks
 - Contingency plans, training
- Rapid detection
- Clear control rules, including the use of inactivated purified vaccines
- Clear pathway to regain freedom

Detection and control

- Rapid detection
 - Passive surveillance: notification, investigation of suspicions, animal welfare rules (daily visual inspection)
 - Active surveillance: targeted surveillance, ante and post-mortem inspection ant slaughterhouses, trade inspection and testing.
- Control principles
 - Delimitation of restricted areas (zoning) and protection of free zones by animal movement control and surveillance.
 - Quarantine measures
 - Slaughter of infected, recovered, and FMD-susceptible contact animals
 - Vaccination limited to specific situations (suppressive, protective)
 - Cleaning and disinfection of premises and all infected material, such as implements, cars, and clothes
 - Disposal of carcasses, bedding, and contaminated animal products in the infected area

Control – vaccination

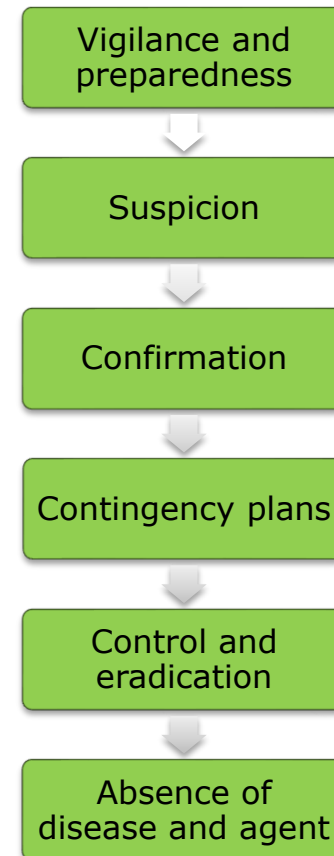
- Emergency vaccination may be adopted:
 - Suppressive (within protective zones) – stamping out, preventive killing of contacts or insufficient capacity processing
 - Protective (within surveillance zones) - stamping out, preventive killing of contacts, marking for movement, treatment products
- Vaccination with the use of conventional vaccines protects from disease, but does not prevent infection and consequently a carrier state.
- The Community adopted therefore in 1990 a policy prohibiting the prophylactic vaccination against FMD.

Confirmation of infection and vaccination interference

- FMD, characterised by a vesicular condition of the feet, buccal mucosa and, in females, the mammary glands, cannot be differentiated clinically from other vesicular diseases.
- Laboratory diagnosis, including isolation of the virus, detection of viral antigen or nucleic acid or of specific humoral antibody, of any suspected FMD case is therefore a matter of urgency.
- To confirm infection: viral detection
 - Field tests “Pen-side”
 - ELISA tests respond in 30m to 4h
 - PCR test respond in 5h
 - Cell culture in 4 days
- To differentiate infected from vaccinated among clinically healthy animals
 - NSP antibody positive (ELISA) infected (7d after infection – a.i.)
 - Virus carriers
 - SP common to infection and purified vaccins (4d a.i.)
- Ref. lab: EU level and country level

Control – part

- Stamping out
 - Outbreak
 - Preventive killing
- Movement control
 - Movement ban in restriction areas
 - Restricted areas
 - Protection + surveillance zones
- Carcass disposal
- Release and save animal products under restricted conditions



Legal base for FMD in Europe

- Directive 2003/85/EC on FMD control which sets out the minimum control measures to be applied in the event of an outbreak of foot-and-mouth disease of whatever type of virus and certain preventative measures aimed at increasing awareness and preparedness of the competent authorities and the farming community for foot-and-mouth disease.
 - Directive 2002/99/EC laying down the animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption.(repealed)
- Regulation (EC) 882/2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules.
- Regulation (EC) 854/2004 laying down specific rules for the organization of official controls on products of animal origin intended for human consumption.
- Regulation (EC) 2074/2005 establishing Requirements concerning food chain information for the purpose of Regulations (EC) N°s 853/2004 and 854/2004
- Regulation (EC) 1069/2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) 1774/2002 (Animal by-products Regulation)
- Council Decision 2009/470/EC defines de rules for financing eradication programs in particular specifies the need for the presentation of annual or multiannual eradication programs towards amongst others, bovine tuberculosis.



European
Commission

Brucellosis of small ruminants

B T R



Brucellosis from small ruminants

1. Characterization of the disease

- The agent
- Pathogeny and lesions
- Incubation infectiousness
- Epidemiological situation – World, Europe

2. Control principles

- Detection and culling infected animals
- Vaccination

3. Legal base for Brucellosis in the EU / European strategy

The agent – part 1

- There are six species of *Brucella*, of which *B. melitensis* (ovine and caprine) and *B. abortus* (bovine) are of importance and subject to eradication programmes
 - Other species: *B. suis*, *B. cannis*, *B. neotomae*, *B. ovis*. More 3 “Nonmen species” from marine mammals
- *Brucella melitensis* (biovars 1, 2 or 3) is the main causative agent of caprine and ovine brucellosis. Sporadic cases caused by *B. abortus* have been observed, but cases of natural infection are rare in sheep and goats
- Excreted in abortion products, milk and semen
- Survives well in environment
- Resistant to treatment it needs special protocols in humans and no clinical treatment is allowed in production animals

Epidemiology – part 1

- Sources: material from abortions (placenta, fetal fluids, foetus ,...); material contaminated with abortion material especially feed, pastures, forages. Vaginal discharges from infected females, after abortion or normal parturition. Milk. Semen. Several tissues from infected animals
- Infection routes: oral and digestive, respiratory, ocular mucosa
- There are many susceptible species (in table 2, from ref.). In Europe reindeer can be important
- Transhumance, pasture cross-contamination between flocks, introduction of infected clinically healthy animals
- Seasonality is important in disease incidence: parturition periods are of higher risk

The disease

Clinically, the disease is characterised by one or more of the following signs:

- abortion, retained placenta, orchitis, epididymitis and, rarely, arthritis, with excretion of the organisms in uterine discharges and in milk.
- Diagnosis depends on the isolation of *Brucella* from abortion material, udder secretions or from tissues removed at post-mortem.
- Presumptive diagnosis of *Brucella* infection can be made by assessing specific cell-mediated or serological responses to *Brucella* antigens.

Situation in humans – part 1

2006

Brucellosis, also known as “undulant fever”, “Mediterranean fever” or “Malta fever” is a zoonosis.

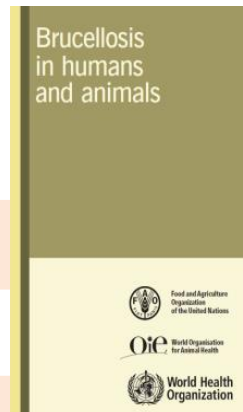
The infection is transmitted by direct or indirect contact with infected animals or their products of which cattle, sheep, goats and pigs are the most important.

It affects people of all age groups and of both sexes (more frequent in males).

The duration of the human illness and its long convalescence makes of this disease an important economic as well as a medical problem for the patient and for society because of time lost from normal activities.

The human disease is mostly caused by *B. melitensis*

It manifests itself as an acute febrile illness which may persist and progress to a chronically incapacitating disease with severe complications.



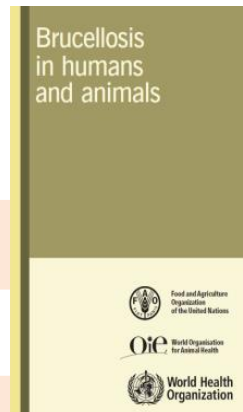
Situation in humans – part 2

The clinical picture is not specific in animals or humans and diagnosis needs to be supported by laboratory tests.

Even though effective treatment is available for the human disease prevention is the ideal

Preventions is achieved through control of the infection in animals and by implementation of hygienic measures at the individual and public health levels.

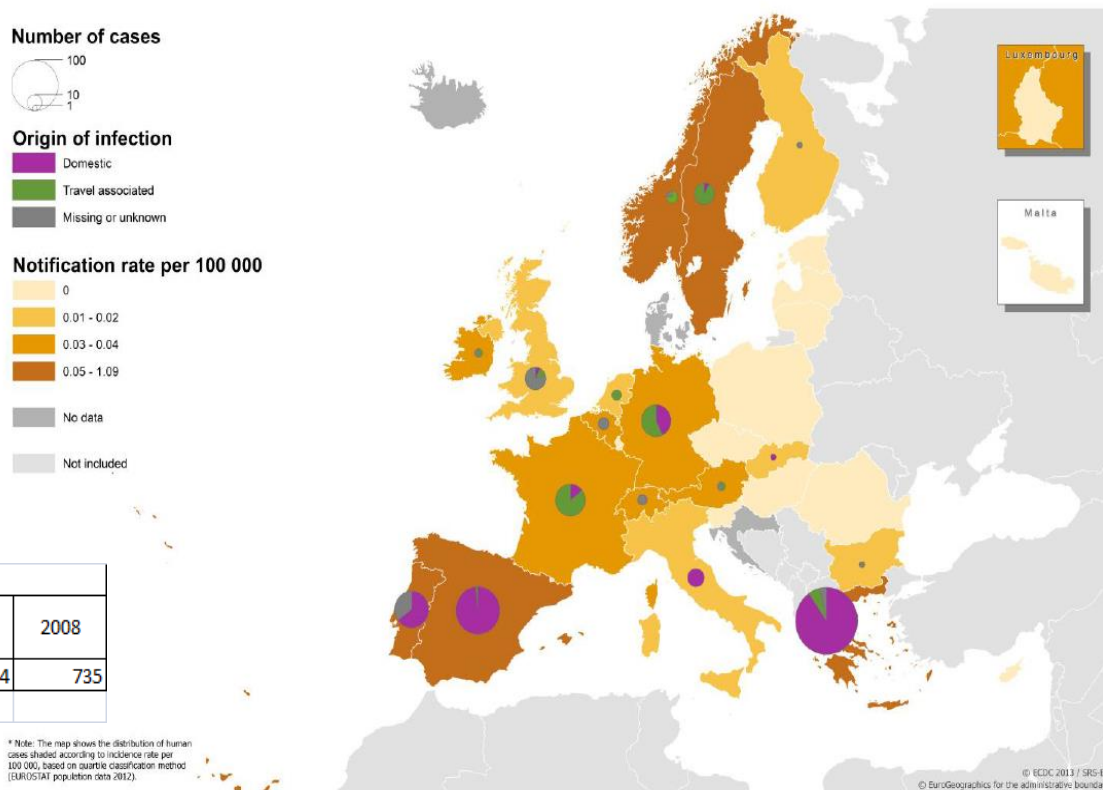
Although there has been great progress in controlling the disease in Europe there is still a risk a infection present in regions where the infection persists in domestic animals and, consequently, transmission to the human population frequently occurs.





Situation in humans – part 3

Figure BR1. Notification rates and origin of infection in human brucellosis in the EU/EFTA, 2012



EU Total	Cases 2012	Confirmed cases					
		2012		2011	2010	2009	2008
		Count	rate/100,000				
	359	328	0,07	336	356	404	735

Source : EFSA, 2012

* Note: The map shows the distribution of human cases shaded according to incidence rate per 100 000, based on quartile classification method (EUROSTAT population data 2012).

© ECDC 2013 / SR5-BFM
© EuroGeographics for the administrative boundaries.

Note: The map shows the distribution of human cases shaded according to incidence rate per 100,000 based on quartile classification method (EUROSTAT population data 2012).

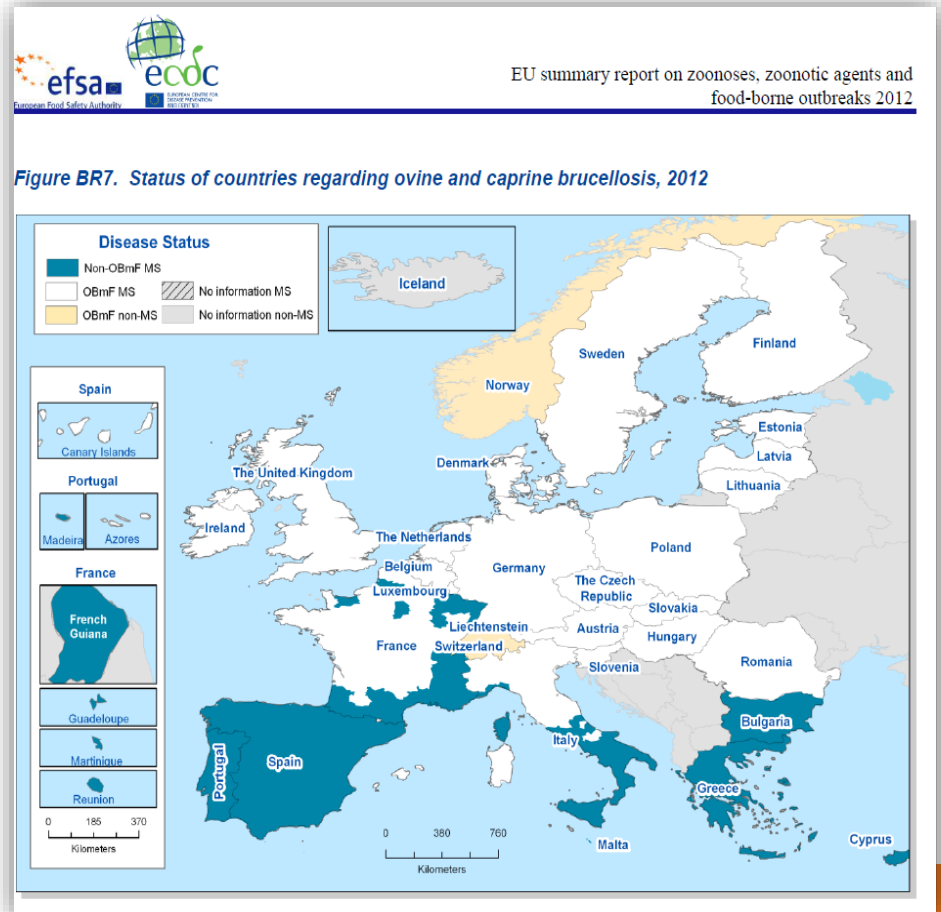
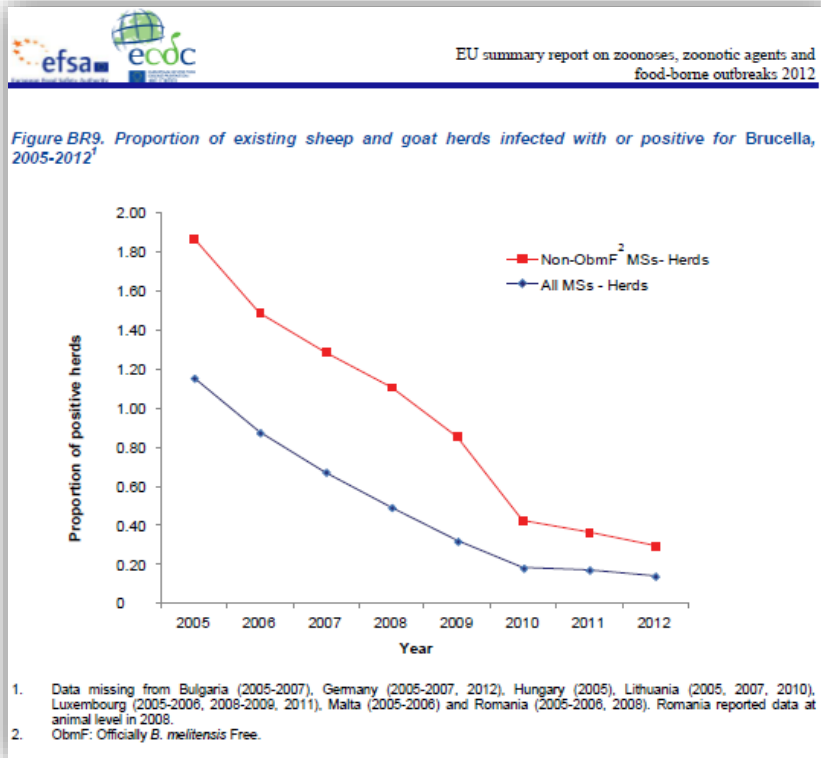
Situation in Europe – part 1

Over the years 2005–2012, the overall proportion of existing sheep and goat herds infected with or positive for *B. melitensis* in the EU was at a very low level, decreased until 2010 and then stabilized at a level of 0.17 % in 2011, with a further slight decrease in 2012 (0.14 %). A slight decrease was observed in the proportion of existing sheep and goat herds infected with or positive for *B. melitensis* in the non-ObmF MSs from 2010 (0.42 %) to 2011 (0.36 %) and 2012 (0.30 %) (Figure BR9).



European
Commission

Situation in Europe – part 2



Detection and vaccination

➤ Bacteriological isolation

- Selective media
- PCR

➤ Serological testing

- CFT
- Rose Bengal test
- ELISA

➤ Vaccination with REV 1 smoothstrain – Strategies

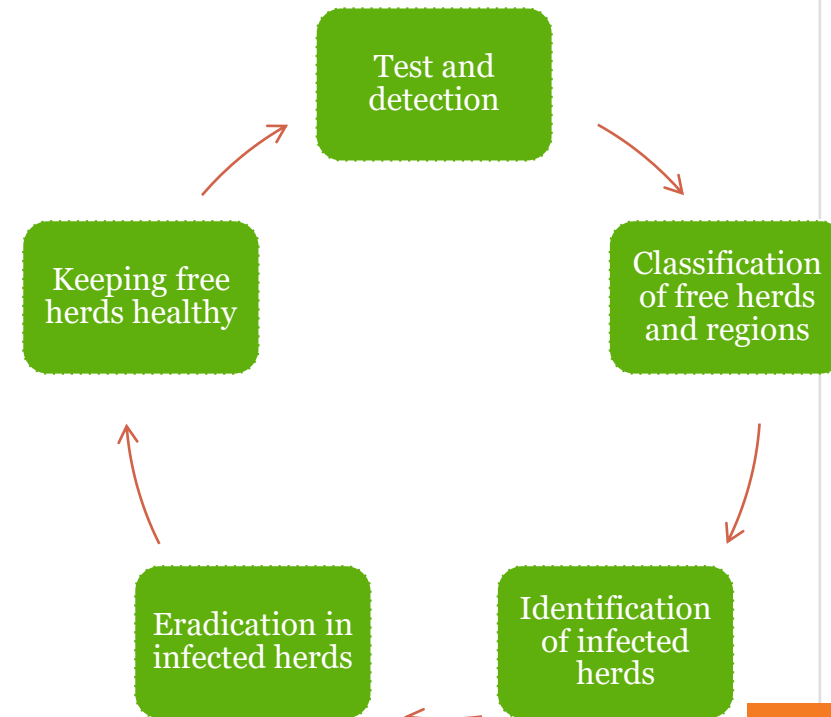
- Young animals (<6m)
- All the flock
- Conjunctival route in animals younger than 6 month of age will reduce false positive reactions

Flowchart of Bml eradication in Europe – part 1

The key concept is that every MS needs to achieve the BmOF status

A *Brucella melitensis* officially free Member State (BmOF) has:

1. At least 99,8 % of the ovine or caprine holdings are officially brucellosis-free holdings; or
2. which fulfils the following conditions:
 - (i) ovine or caprine brucellosis is a disease that has been compulsorily notifiable for at least five years
 - (ii) no case of ovine or caprine brucellosis has been officially confirmed for at least five years
 - (iii) vaccination has been prohibited for at least three years



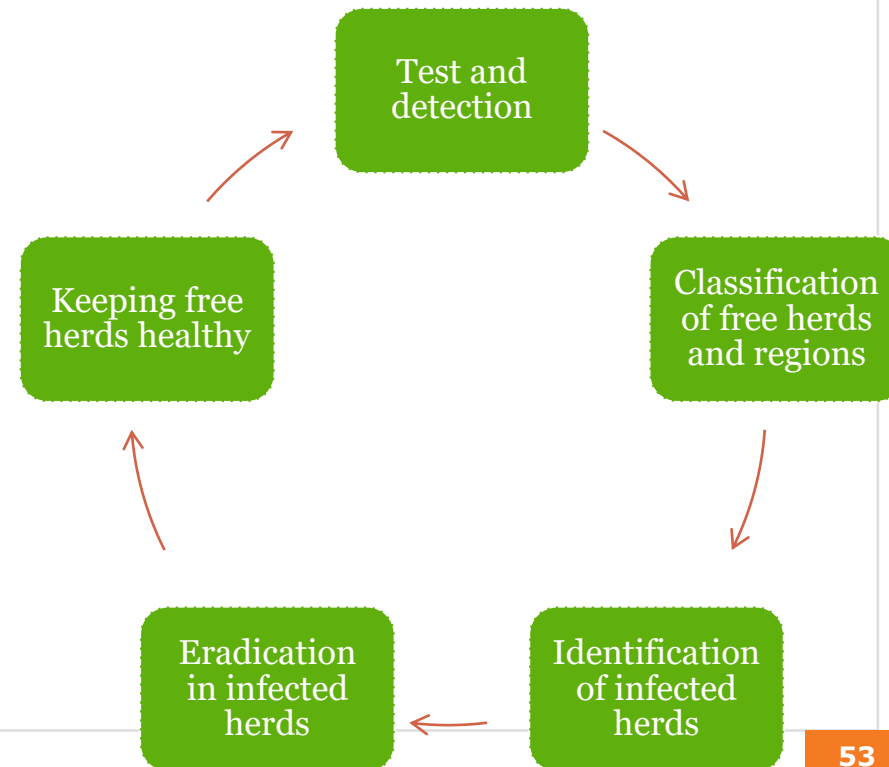
Flowchart of Bml eradication in Europe – part 2

The key concept is that every MS needs to achieve the BmOF status

Control principles: Detection, Eradication, Classification, Biosecurity

Classification: BmOF. Non BmOF; Officially Brucellosis Free herd, Brucellosis Free herd, Non Officially Brucelosis Free herd

Eradication measures: testing, slaughtering t+ animals / stamping infected herds, herd retest periodically (periodicity adjusted to the risk).



Legal base for brucellosis in ovine and caprine

- Directive 1991/68/EEC defines the animal health conditions governing intra- Community trade in ovine and caprine animals, as amended and updated.
- Council Decision 2009/470/EC defines the rules for financing eradication programs in particular specifies the need for the presentation of annual or multiannual eradication programs towards amongst others, bovine tuberculosis.



European
Commission

**Thank you
for your attention!**

BTS





Better Training for Safer Food is an initiative of the European Commission aimed at organising an EU training strategy in the areas of food law, feed law, animal health and animal welfare rules, as well as plant health rules.

IMPLEMENTED BY



IN SUBCONTRACT WITH



ADT Projekt Gesellschaft der Arbeitsgemeinschaft Deutscher Tierzüchter mbH

Adenauerallee 174

53113 Bonn, Germany

Internet: www.btsf.adtprojekt.net

www.adtprojekt.de

E-Mail: 2013-96-03@adt.de

adtprojekt@adt.de

Tel.: +49 (228) 91447 - 30

Fax: +49 (228) 91447 - 31

Better Training for Safer Food BTSF

*European Commission
Consumers, Health and Food Executive Agency
DRB A3/042
L-2920 Luxembourg*