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REPORT OF THE

"Bovine, sheep and goats Brucellosis"
TASK FORCE SUB-GROUP

Meeting held in

Vila Real

Portugal

15-16 May 2014

REPORT OF THE

MEETING OF THE "BOVINE, SHEEP AND GOATS BRUCELLOSIS" SUB-GROUP OF THE

TASK FORCE FOR MONITORING DISEASE ERADICATION

HELD IN VILA REAL, Portugal, 15-16 MAY 2014

PARTICIPANTS: see Annex I

AGENDA: see Annex II

LOCATION: Universidade de Trás-os-Montes e Alto Douro (UTAD), Vila Real, Portugal.

INTRODUCTION - Objectives of the EU-Task Force Brucellosis sub-group

The scope of the visit is to share information and experience of the expert members with the hosting colleagues as well as to give technical support if needed or requested by the visited country. After the visit a report is issued by the experts, based on the information provided on the spot by the country and on the findings verified directly by the experts themselves during the visit.

The main goal of the Task Force is to leave at disposal of the visited country the expertise of its expert members, in the light to give a contribution, with an external independent technical assessment, in the evaluation of strength and weaknesses of strategies and measures in place for the control and eradication of the disease concerned.

Conclusions and recommendations are formulated from a general point of view and are proposed in the report with the main scope to be a basis for the Veterinary Services of the visited country to reflect on the possible improvement of different aspects of the control and eradication programme for the disease concerned. The country visited may amend the programme according to what it is suggested by the Task Force, or it may choose other approaches, also in consideration of social and economic factors that may influence the success of the measures adopted, and which are not in the remit of the Task Force.

Conclusions and Recommendations are related to the picture of the situation as resulted during the visit based on the information provided by the country visited on the spot. Further developments of the country's situation may be the subject of a following visit aimed to get updated information and new feedback from the Veterinary Services.
The reports of the TF held in different countries in the last years are published on the following website. (http://ec.europa.eu/food/animal/diseases/index_en.htm)

DAY 1

1. Structure and organization of the Veterinary Services - Animal Protection Department - DSPA.

Dr. Miguel Lemos Fernandes, Director, Veterinary Services - Animal Protection Department (DSPA).

Since 2007, the Portuguese territory has been divided into five regions (Norte; Centro; Lisboa e Vale do Tejo, Alentejo, Algarve) on the mainland, plus the two autonomous regions of Azores and Madeira. The General Directorate of Food and Veterinary Services (DGAV) is a central service of the Ministry of Agriculture and Sea (MAM), coordinated by a secretariat of state. It is structured into several departments, being the most important for the coordination of the eradication programmes the Department for Animal Protection (DSPA) and the Department for Food Safety (DSSA). The DGAV presents also a vertical structure with Regional services under his direct supervision. The five Regional Veterinary Services (DSAV – Directorate of Food and Veterinary Services) contain several departments (Norte: 6, Centro: 6, LVT: 3, Alentejo: 4 and Algarve: 0).

Within DSPA, the Epidemiology and Animal Health Division and the Animal Identification, Registry and Movement Control Division are the ones involved directly with programmes activities.

At Regional level, DGAV is represented in each of the 5 regions with a Regional Food and Veterinary Department with local units (20). These services have at regional level the same competences of the DGAV.

DGAV is the national veterinary and plant health authority, as well as the authority for the food safety system management, therefore responsible for policies definition, coordination, implementation and assessment.

The Department of Animal Protection regulates and coordinates animal health and welfare procedures and elaborates, coordinates and supervises the National Animal Health Plan and the eradication programmes on bovine brucellosis (BB) and sheep and goats brucellosis (S&GB). The Department also promotes the necessary actions to be implemented, including the management of the information system for the ruminants eradication programmes (PISA).

The Department collects and analyse epidemiological data, and prepare and supply the nosological information to the national authorities, the European Commission and OIE. This Department also establishes the sanitary requirements for the animal movements.
The legal framework for the eradication of bovine and sheep and goat brucellosis includes Council Directives 64/432/CEE and 91/68/CEE, the D.L. 244/2000, 27/Sept. and for the regulation of Farmers organizations (OPP), the following “Portarias”: 178/2007, 9/Feb.; 1004/2010, 1/Oct. and 96/2011, 8/March.

2. National Animal Identification and Registration System (SNIRA) – DSPA.

Dr. José Neves, Veterinary Services - Animal Protection Department (DSPA).

SNIRA is the national Identification and Registration System in Portugal. It was created in 2006 with the National Decree nr. 142 of 27/7/2006, and contains rules for the identification, registration and movement of livestock animals. All holdings of cattle, sheep and goats are registered in the database with a unique holding code.

The Animal Protection Department is the Competent Authority for the implementation and coordination of SNIRA and sets the requirements according to national legislation. Almost all organisations involved in the animal health sector have access to SNIRA; this includes the Public Veterinary Services and the five Agriculture Confederations. Main features of SNIRA are the following: the register of holdings, the register of animals, a section with the different notification forms, the documents on movements, the database on animal health identification and information (animal movement restrictions).

2.1. Distribution of bovine livestock

Cattle are identified according to Regulation 1760/2000/EC with two ear-tags (with the same identification number) applied within 20 days after birth and in any case before leaving the original holding. The passport for each animal is issued within 14 days after communication of birth. Movement of animals is allowed only if accompanied by their passport. The passport update with the information on movements is under the responsibility of the bovine keeper. Before year 1997, cattle were identified with one ear-tag only. As foreseen in Regulation 1760/2000/EC, cattle introduced from Member states maintain their EU ear-tag, while cattle coming from third countries are remarked.

2.2. Distribution of sheep and goats

Identification of sheep and goats is carried out according to Regulation 21/2004/EC. Before 9/7/2005, sheep and goats were identified with only one ear-tag and then, after July 2005, with two ear-tags. Since 1/1/2010, all sheep and goats have been identified with an electronic identification system in accordance with European legislation. Animals must be identified within a period of six months after birth and in any case before leaving the original holding. Small ruminants raised in an extensive system or on free-range farming must be identified within nine months. Sheep and goats are identified with a ruminal bolus (containing a microchip) and with one ear-tag in addition, or, in alternative, with two ear-tags (one of them containing a microchip). For movement purpose, young lambs and kids are identified with a temporary identification ear-tag (only one ear-tag, without microchip). These movements of young animals are registered in both holdings, *i.e.* in the register of the sending holding, as well as in the register of the receiving holding.

3. Animal Health Information System (PISA.Net) – DSPA.

Dr. Inês Cardoso Veterinary Services - Animal Protection Department (DSPA).

This computer database supports the information on health activities related to the implementation, control and monitoring of official plans for the eradication of tuberculosis, brucellosis and enzootic bovine leucosis in cattle as well as of brucellosis in sheep and goats. The management of this tool is carried out at DGAV headquarters: the Division of Information Systems is dealing with IT issues related to the functioning of the system, while the Directorate of Animal Protection Services / Division of Epidemiology and Animal

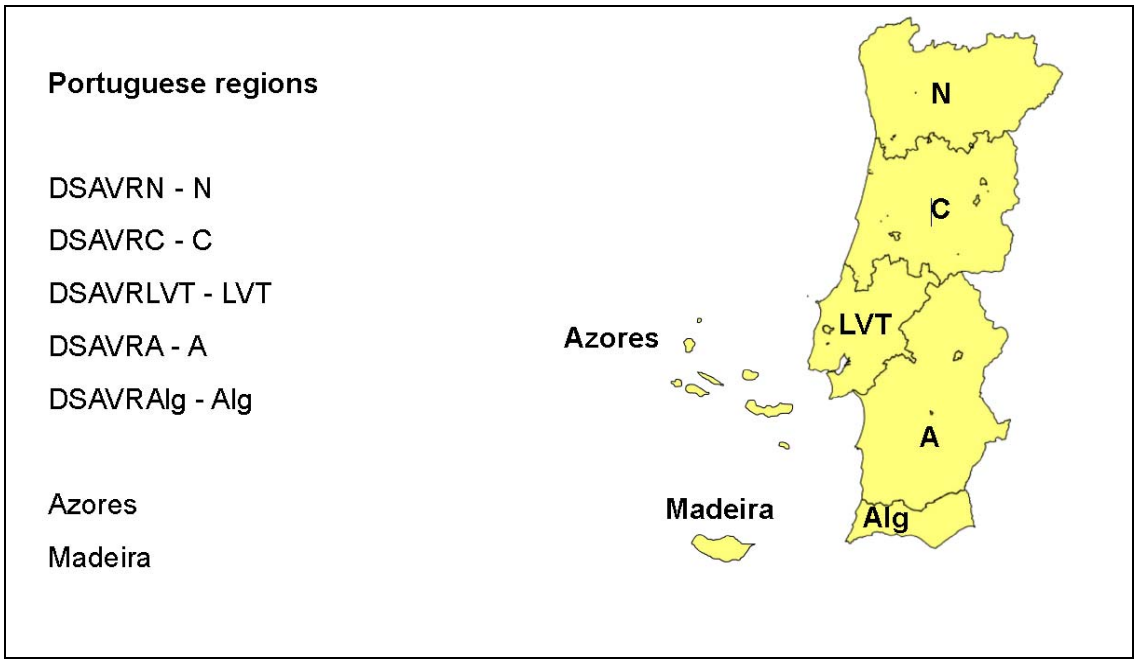
Health – is dealing with the issues of designing and maintaining the content and purpose. The system architecture relies on a Central SQL Server database for PISA placed in DGAV's headquarters data-centre. Each local service has a server with a database in SQL Server/SQL Server Express which synchronizes the data to/from the central database via web-service. Each local client accesses (register/update) to the data in the local database server, according to his profile. Access is granted to several entities, such as the DGAV Central Services, the DGAV regional services headquarters, the DGVA local services (regional services), the Farmers' organizations and the laboratories. The database ensures a constant flow of information between the various entities, with the possibility of performing flexible analysis. The data input is done through pre-defined lists, custom lists, or user-defined lists. As far as the sanitary status of the herd is concerned, the PISA.Net database is connected through a web-service to the SNIRA database.

4. Bovine population characterization – DSPA.

Dr. José Neves, Veterinary Services - Animal Protection Department (DSPA).

The total number of cattle in Portugal is about 1,500,000 heads distributed in approximately 66,000 herds. From an administrative and animal health point of view, the territory of Portugal is divided in five Regions, plus the Islands of the Azores and Madeira (seven in total, **Figure 1**).

Figure 1. Portugal administrative divisions.



The highest number of herds is located in the Northern Region (with about 30,000 bovine holdings, **Figure 2**), while the highest number of cattle is present in Alentejo Region (**Figure 3**).

Figure 2. Portugal, number of bovine holdings per region.

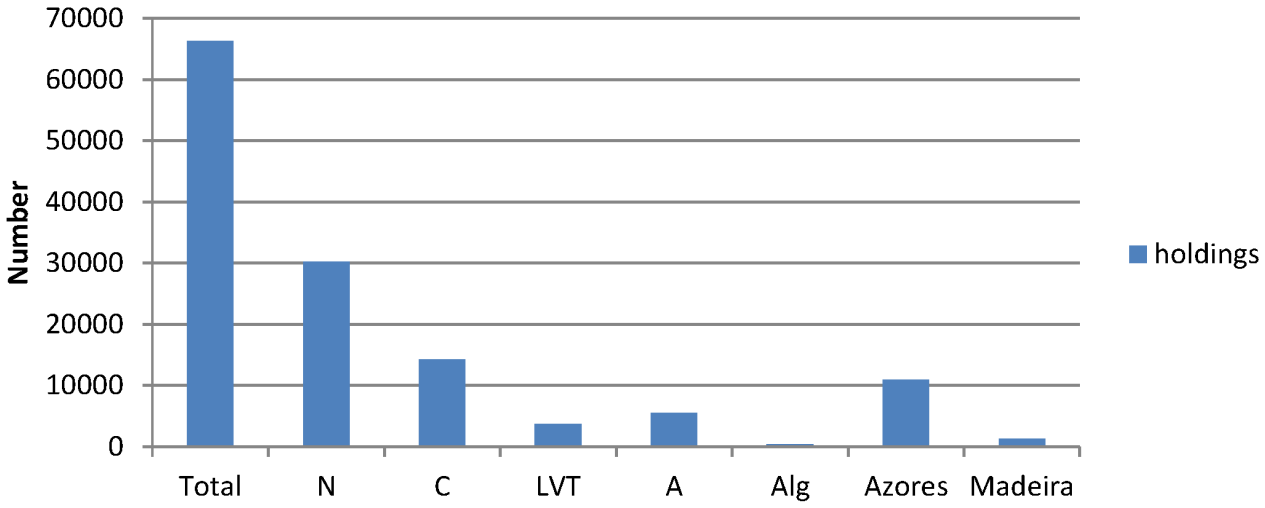
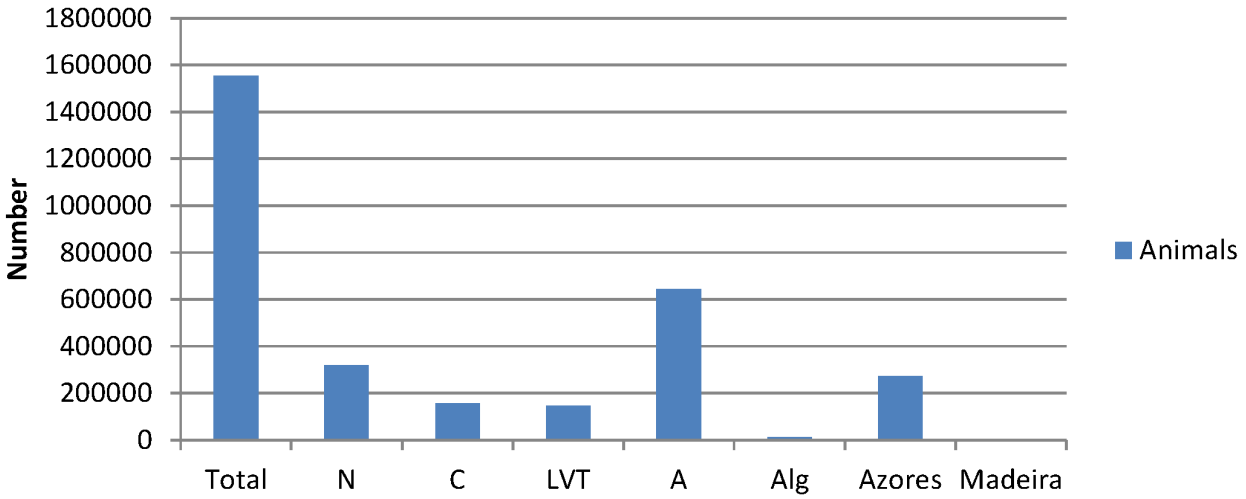
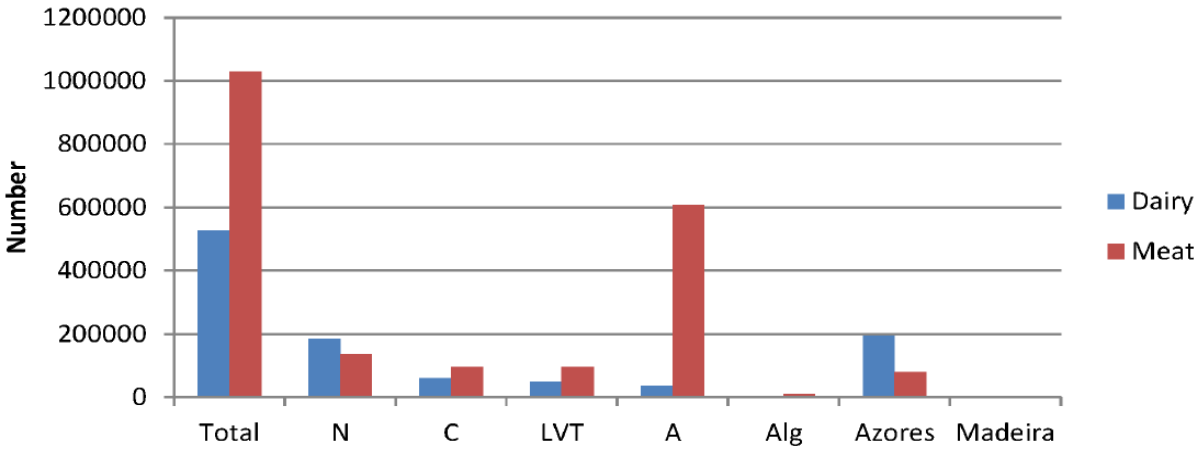


Figure 3. Portugal, number of cattle per region.



Almost two thirds of cattle are farmed for meat production, while only one third of cattle population is composed by dairy cows (**Figure 4**).

Figure 4. Portugal, number of bovines for meat and dairy production.



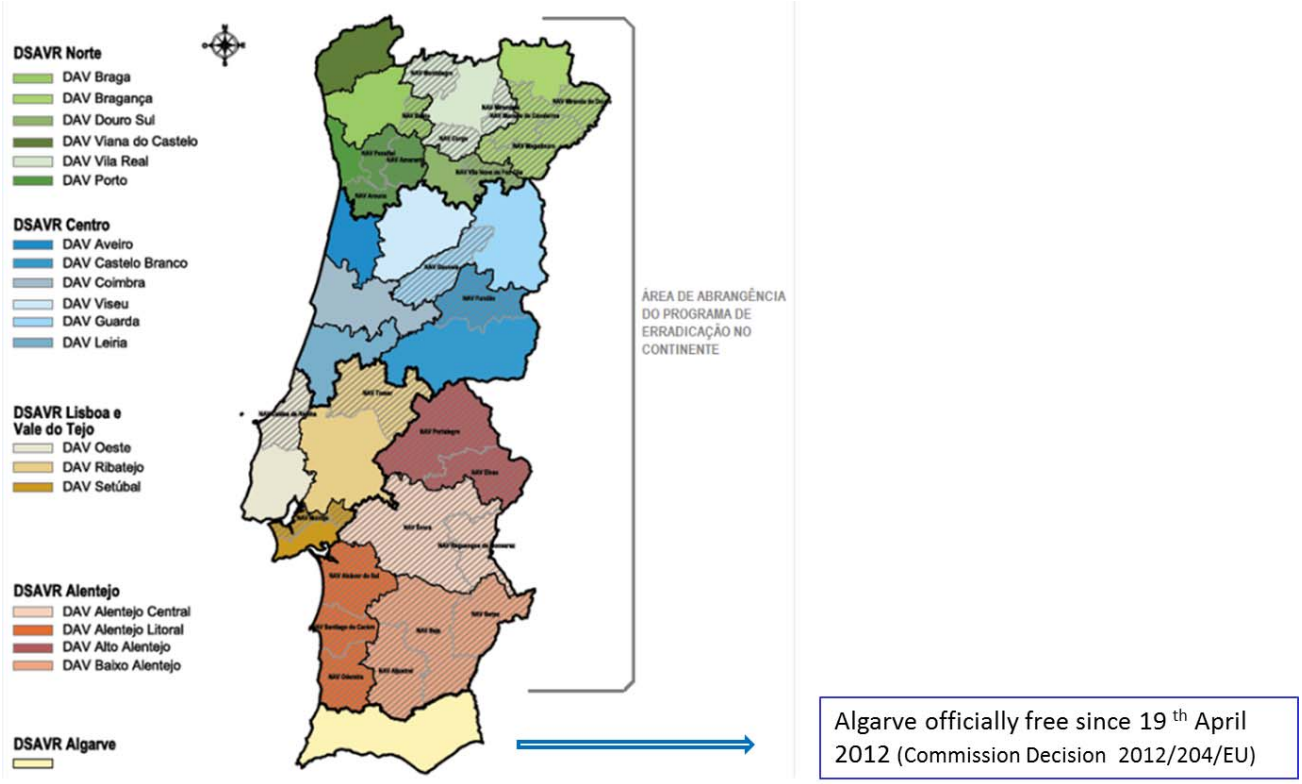
The fattening cattle population consists of many different breeds, mainly cross breeds (79%), Mertolenga (4%), Alentejana (4%), Brava de Lide (3%) and Limousine (2%), together with other breeds of minor importance. The bovine dairy population consists of 54% cross breed, 45% Holstein Friesian, and 0.3% Jersey breed and other minor breeds.

5. Bovine brucellosis eradication programme in the Mainland /evolution – DSPA.

Dr. Miguel Lemos Fernandes, Director, Veterinary Services - Animal Protection Department (DSPA).

The entities involved in the implementation of the BB eradication programme in Portugal are the following:
- Coordination: Central Food and Veterinary Services – DGAV
- Supervision: Regional Food and Veterinary Departments – DSAVR (**Figure 5**)
- Field activities: Farmers Organisations – OPP (Livestock Producers Organisations)

Figure 5. Organisation of the Regional Food and Veterinary Departments (DSAVR) in Portugal mainland.

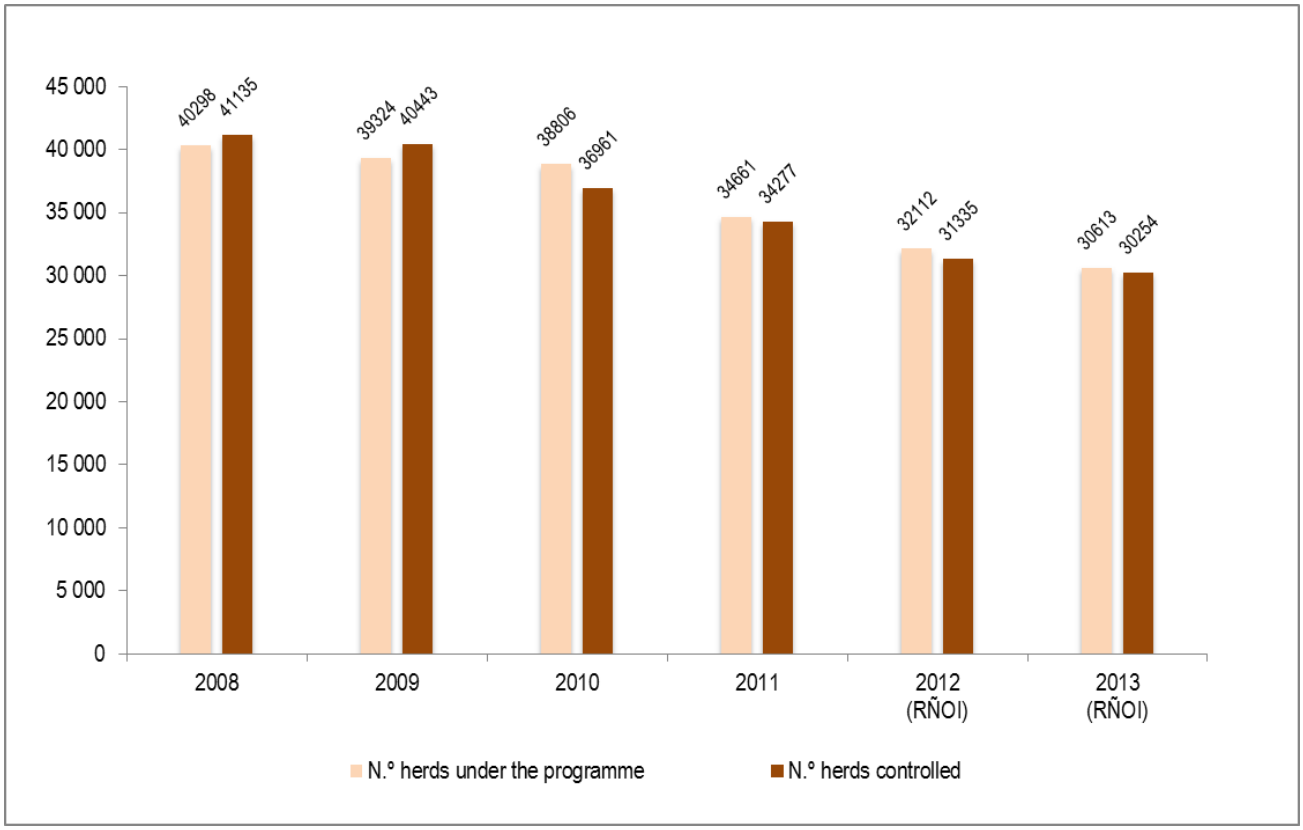


Each year the OPP have to submit to the DSAVR a project for the implementation of the programme in the following year, then, once the project approved by the DSAVR, the OPP is officially accredited for the implementation of the programme. There is a requirement of full transparency in the budgets submitted to the DSAVR. The budgets allowed by the DSAVRs have been reduced for the last years.

The Algarve region has been officially free from bovine brucellosis since 2012 and will not be considered further in this presentation.

There were 30,613 herds and 969,524 animals under the programme in 2013. The evolution since 2008 is given in **Figure 6**. There has been a decrease trend since 2008, and the difference between eligible and controlled herds is very low.

Figure 6. Herds under the programme/controlled in Portugal mainland (2008-2013).



The eradication programme includes, defines and describes the main following measures and tools:

- Epidemiological evaluation
- Preventive and health police measures
- Diagnostic tests
- Compulsory slaughter of reactive animals
- Herd depopulation (stamping out)
- Health restrictions (herds on hold)
- Restocking (repopulation)
- Measures in case of positive animals
- Health status of the herds
- Vaccination
- Restriction of animal movements

The general measures of the eradication programme are:

- Serological control (blood sampling) and ELISA in milk
- Vaccination with RB51 (specific programmes only)
- Slaughter of animals:
  - RBT+ or CFT+ (depending on health status and vaccination) :
    - RBT+ →CFT; if CFT+→slaughter
    - Infected herds (with isolation): RBT+ → slaughter

    (*if > 5% RBT+, any animal positive to either RBT or CFT is slaughtered*)
  - Stamping out under specific conditions
    - Epidemiological survey
    - Authorization from Veterinary Regional Services

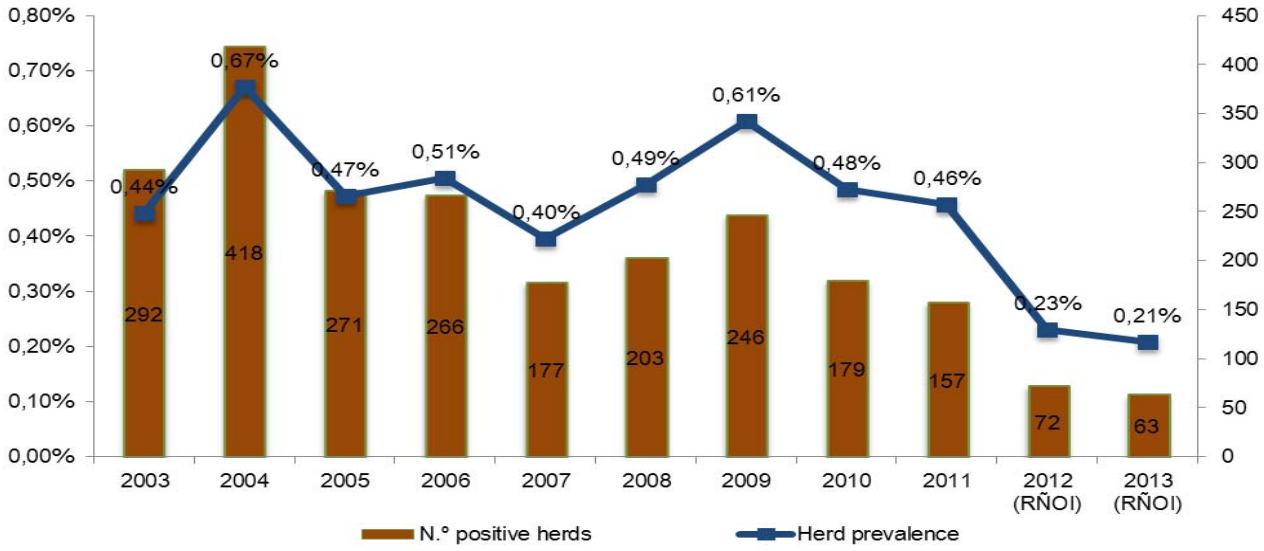
- Criteria:
  - Epidemiological evolution – no improvement in the last 12 months
  - Impossibility of implementing prophylactic measures
  - *Brucella* isolation

The minimum age for sampling is as follows:

- B3 (*free*) and B4 (*officially free*) herds: based on departmental areas, according to the percentage of B3 and B4 (reporting exclusively to *B. abortus*) in the last 4 annual reports assessed: if ≥ 99.8%: 24 months; if < 99.8%: 12 months.
- B2 (*not free*) and B2.1 (*not free with one negative check*) herds: 6 months
- B3S (*suspended*) and B4S herds: 12 months

Sampling for laboratory diagnosis is carried out by the OPP in approximately 99% of herds and by DSAVR in about 1% (*the farmer can choose the OPP and the veterinarian within the OPP*). Serological results are registered in the national database (PISA.Net) by the laboratories. Health status and updates are carried out by DSAVR (serology and bacteriology), according to the results of laboratory tests. **Figure 7** shows the evolution of the herd prevalence in Portugal mainland from 2003 to 2013.

Figure 7. Evolution of the herd prevalence in Portugal mainland (2003-2013).



The general trend is good but a decrease in the slope is observed for the last two years, which is usually recorded at the end of an eradication programme.

Figure 8 shows the evolution of the herd incidence in Portugal mainland from 2003 to 2013. Again the evolution is good, but it can be observed that most infected herds consist in new outbreaks. This could mean that, while current eradication measures seems having been efficient in reducing prevalence, they are still not enough implemented in a way efficient to prevent the spread of the disease from existing sources.

Figure 8. Evolution of the herd incidence in Portugal mainland (2003-2013).

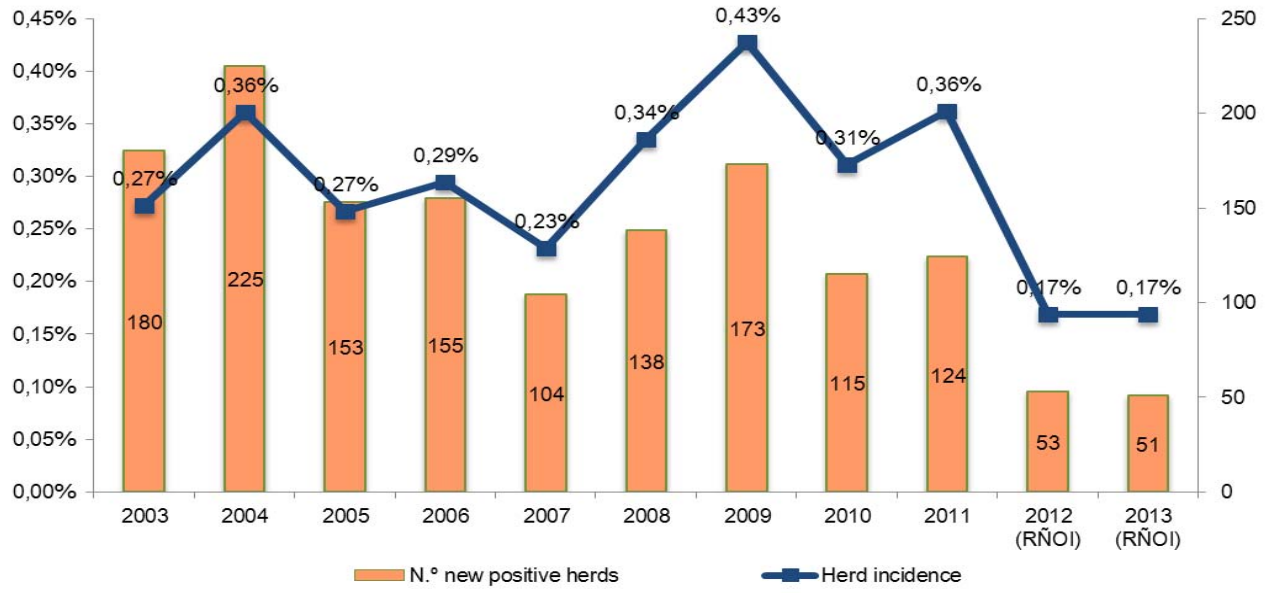


Figure 9 gives the evolution of "infected herds" (i.e. positive herds confirmed as infected by *Brucella* isolation) from 2003 to 2013. This figure shows that approximately 50% of outbreaks are confirmed by isolation of the pathogen.

Figure 10 shows the evolution of the animal prevalence in Portugal mainland from 2003 to 2013. **Figure 11** and **Figure 20** give respectively the evolution of herd prevalence and herd incidence in each region from 2009 to 2013.

Figure 9. Evolution of "infected herds" in Portugal mainland (2003-2013).

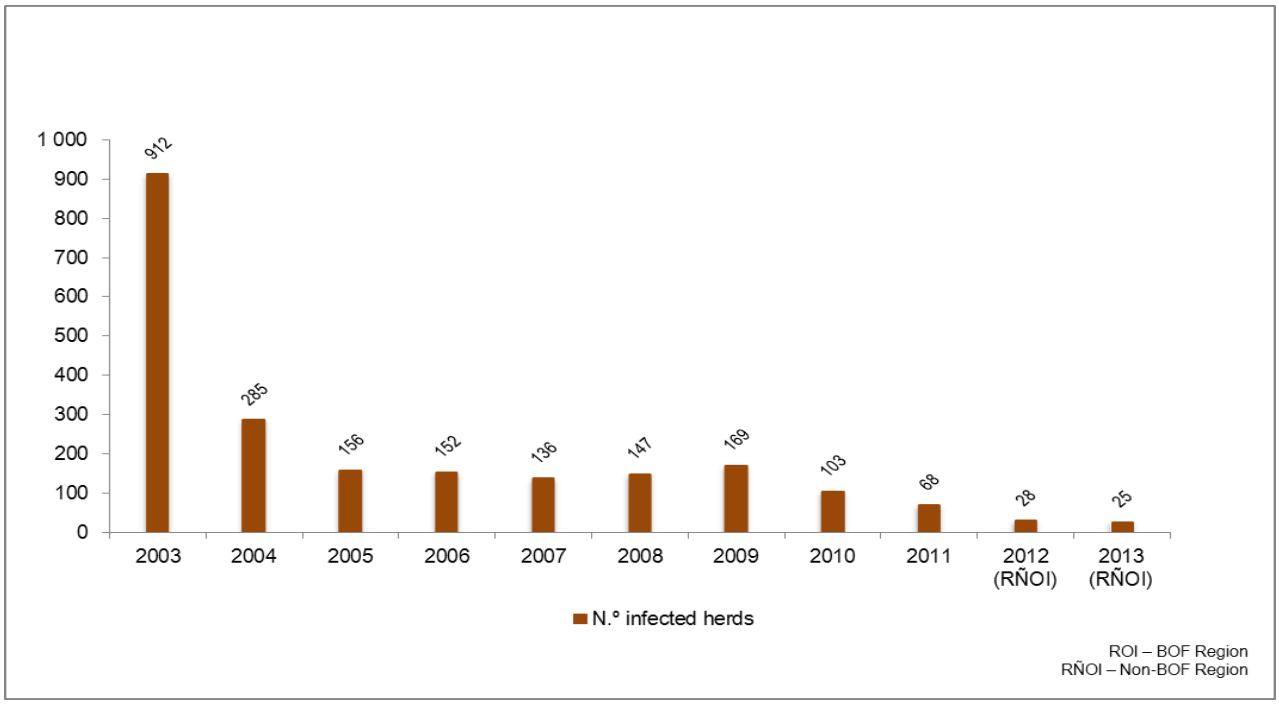


Figure 10. Evolution of the animal prevalence in Portugal mainland (2003-2013).

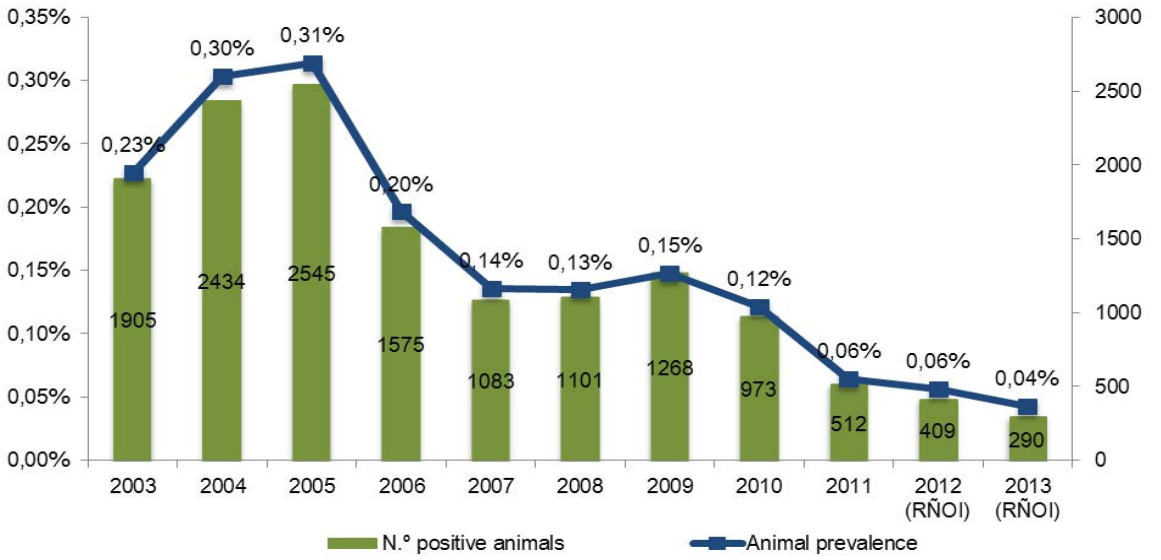


Figure 11. Evolution of the herd prevalence according to the region (2009-2013).

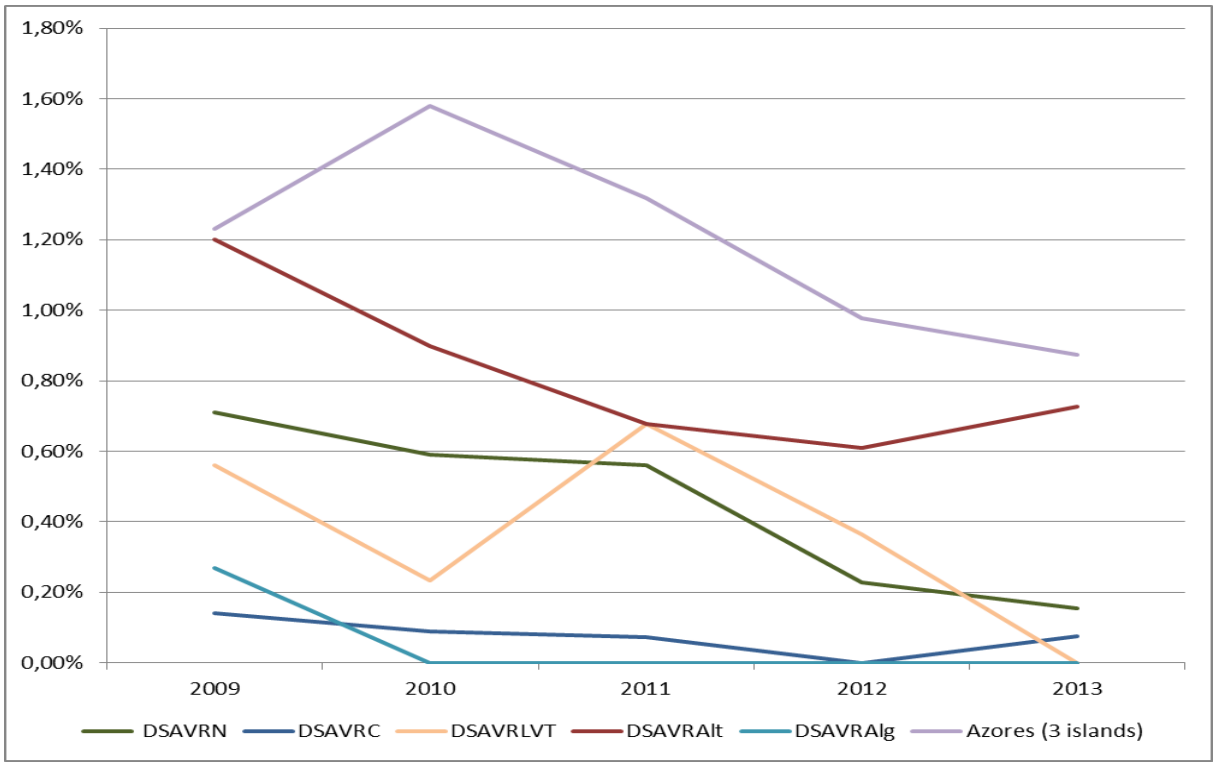
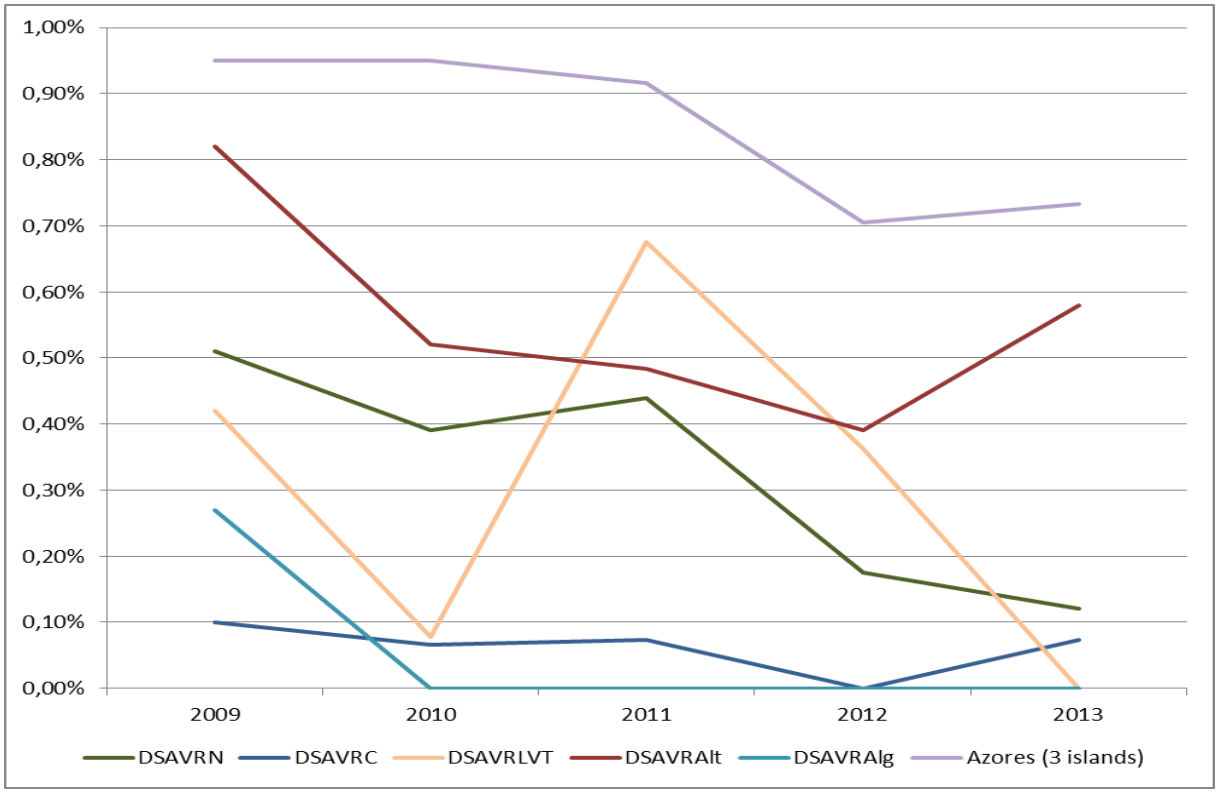
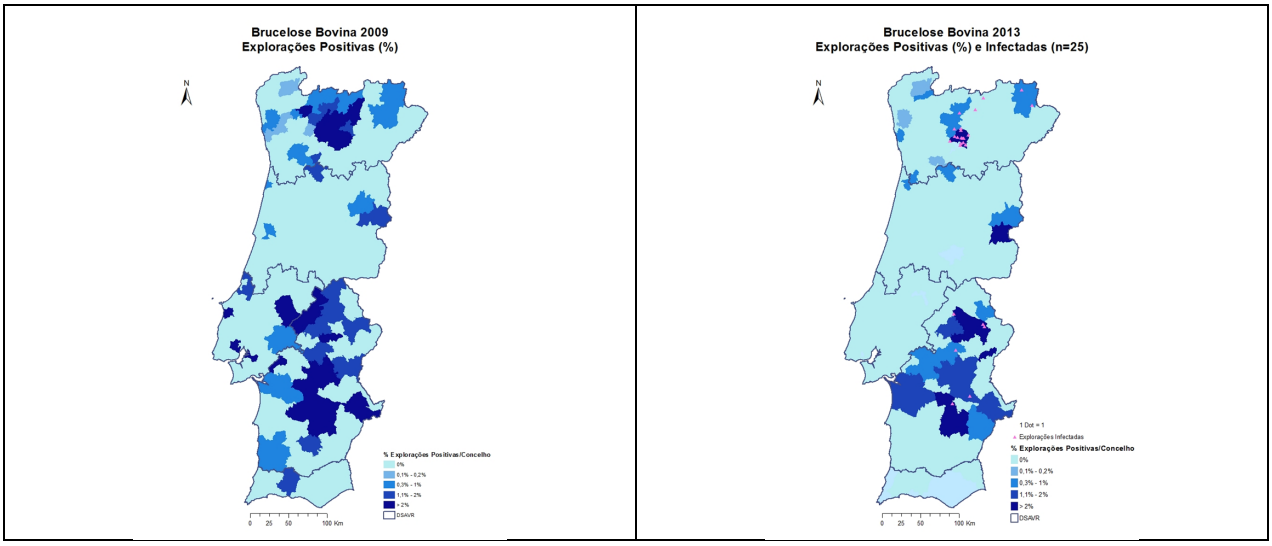


Figure 12. Evolution of the herd incidence according to the region (2009-2013).



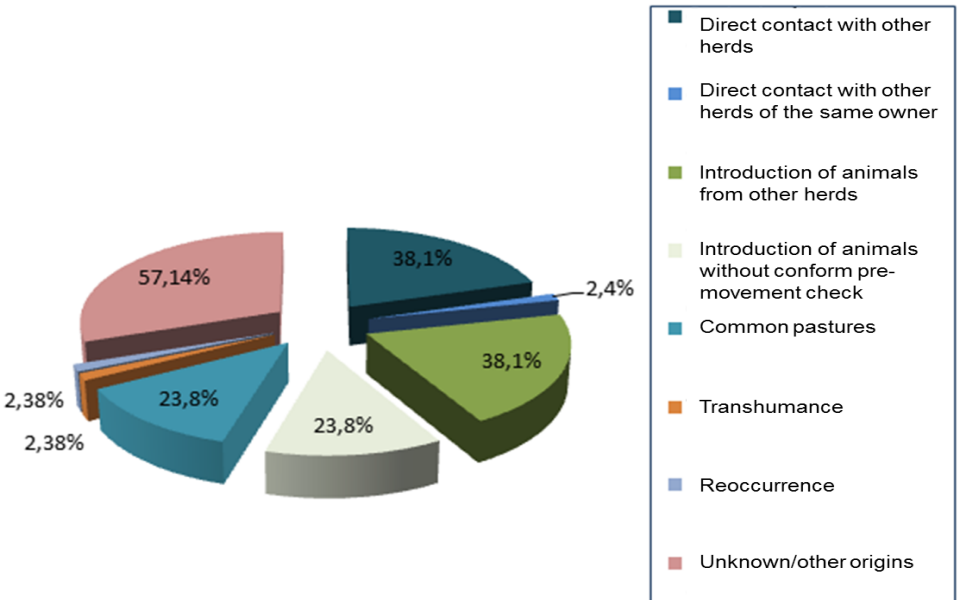
Both parameters clearly decrease in two regions: North Region (DSAVRN) and the region of Lisbon and The River Tagus Valley (DSAVRLVT). In the Azores, prevalence decreases but incidence slightly increases. In the two other non-OBF regions, Centre (DSAVRC) and Alentejo (DSAVRAlt), there is an increasing trend for both parameters since 2012. However, in the Centre Region, the rates are very close to zero.
Error! Reference source not found. shows the evolution of the geographical distribution of positive herds according to the counties in each region from 2009 to 2013.

Figure 13. Evolution of the distribution of positive counties (2009-2013).



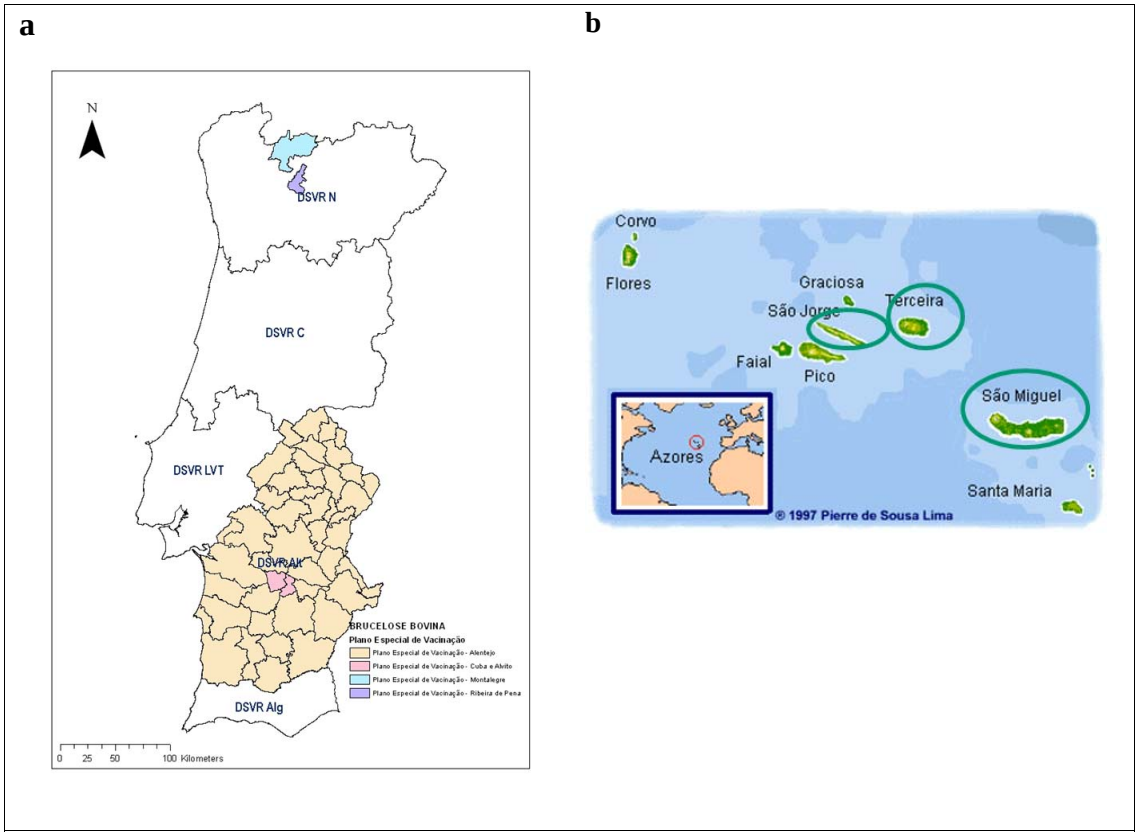
In the two regions (North and Alentejo) were the infection is still of great concern, a special vaccination programme has been implemented (see hereafter). **Figure 14** gives the potential sources of infection identified by epidemiological investigations in 2013. Most sources are unknown

Figure 14. Potential sources of infection identified by epidemiological investigations (2013).



The RB51 special vaccination programme concerns:
- in the mainland, the counties of Montalegre and Vieira do Minho and Ribeira de Pena in the North Region, as well as the Alentejo Region, with a specific programme in the counties of Cuba and Alvito (**Figure 15a**)
- in Azores: Terceira, São Jorge and São Miguel islands (**Figure 15b**).

Figure 15: Regions & counties under a special RB51 vaccination programme (2013).



Since 2006, the numbers of vaccinated herds has decreased from 1,025 to 597 in 2013, while the number of vaccinated animals has less varied (2,750 to 2,283).
In conclusion:
- At National level the implementation of compulsory pre-movement tests in order to prevent the introduction of positive animals into B3/B4 herds has greatly increased from 2006 to 2013 (2,448 vs. 13,785 herds ; 26,375 vs. 54,186 animals checked);
- Procedures regarding risk assessment testing (TAR) prior to movement of cattle from non-free holdings to fattening holdings are in place (RBT and CFT ≤ 30 days before the date of entry for males or females over 6 months from B4S, B3S, B2 and B2.1 holdings);
- Milk ELISA has been progressively applied to B3/B4 dairy herds since 2012 (3,455 herds controlled in 2013);
- The NRL has tested in culture 1 and 10 samples from abortion materials in 2012 and 2013 respectively (3 positive cultures in 2013);
- A testing strategy including the Brucellosis skin test (BST) (to be performed by the Veterinary Services) to investigate suspected false positive serological reactions (FSPR) in areas with less than 0.5% herd prevalence has been prepared and is to be presented to the European Commission;
- As far as the database management is concerned, and in order to enforce the movement control:
    - Data concerning health status of holdings is reported in the database for animal identification and registration (SNIRA) through a web-service from the animal health database (PISA.net);
    - Identification of non-officially free fattening holdings is implemented in PISA.net.
- Guidelines have been edited by the vet. Services:

- Procedures for the sanitary status classification of herds;
- Manual of strategy for the control of bovine brucellosis;
- Procedures for the pre-movement test implementation;
- Procedures for the sampling of materials for the diagnosis of brucellosis;
- Procedures for mentioning the sanitary status on bovine passports.

Finally, from the recommendations delivered by the Task Force subgroup during the 2007 meeting in the Azores, the main following measures have been implemented:

- A special vaccination programme in place for Alentejo Region
- Special vaccination programmes still ongoing in Northern Region
- A different strategy applied in low prevalence areas (mainland) regarding false positive reactors;
- Milk ELISA applied for health status maintenance in B3 / B4 herds.

The targets for brucellosis expected by the Commission (working document SANCO/10181/2014 rev1 - 2015-2017) are presented in the following **Table 1**.

Table 1. Targets for brucellosis expected by the Commission

(working document SANCO/10181/2014 rev1 (2015-2017).

Baseline (2012) (PT - co-financed programme)	2015 (% reduction compared to 2012 of at least:)	2017 (% reduction compared to 2015 of at least:)
Herd prevalence		
0,31	25 %	20 %
Herd incidence		
0,23	25 %	20 %

No date is foreseen up to now for the stop of vaccination in Portugal.

6. Bovine population characterization and bovine brucellosis eradication programme in the Autonomous Region of Azores /evolution –DSV/RA– Azores.

Dr. Hernani Martins, Veterinary Services - Autonomous Region of Azores (DSV/RA).

The Azores archipelago is divided in three groups of islands (**Figure 15**).
- Western Group: Flores and Corvo
- Central Group: Terceira, Graciosa, São Jorge, Pico and Faial
- Eastern Group: Santa Maria and São Miguel

Figure 15. The Azores archipelago.

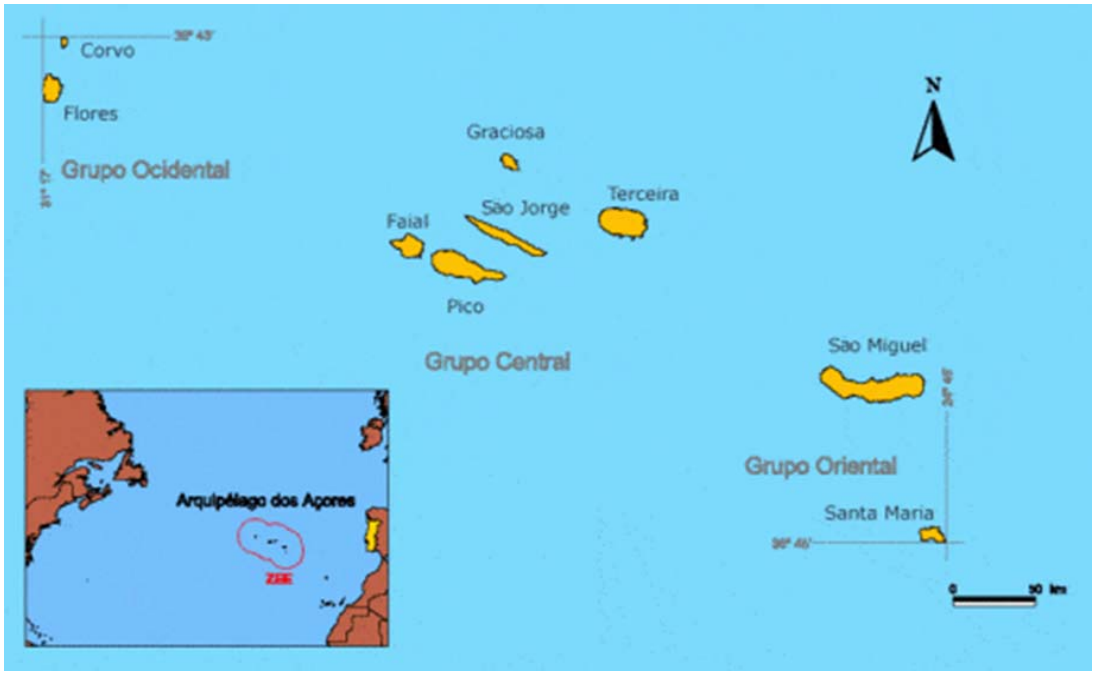


Table 2. Distribution of the cattle population in the Azores

Islands	Cattle	Herds
St. Maria	6,253	271
S. Miguel	118,752	3,309
Terceira	64,415	1,867
Graciosa	7,833	319
S. Jorge	19,547	767
Pico	23,707	724
Faial	15,649	672
Flores e Corvo	5,980	349
Total	**262,787**	**8,278**

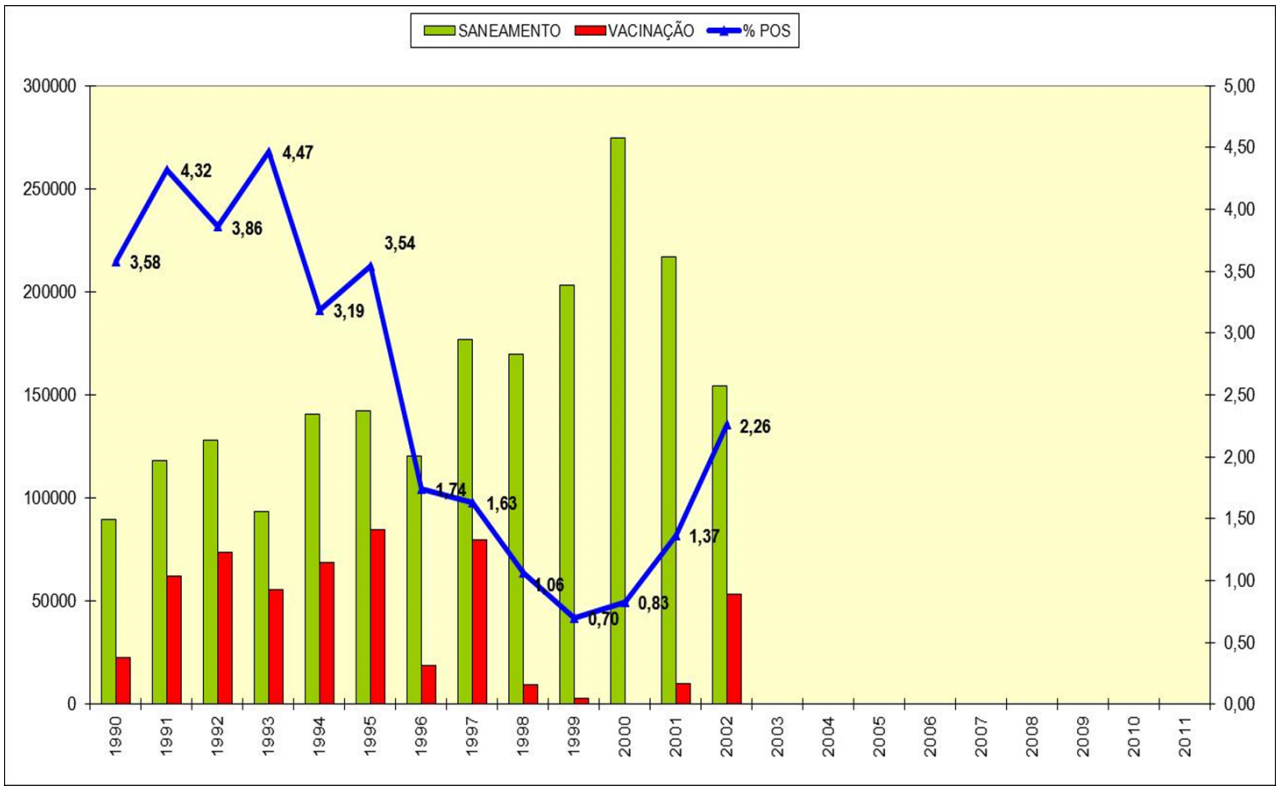
The Regional Directorate of Veterinary Services belongs to the Regional Directorate of Agriculture and Rural Development (RDARD) and includes a division for Food Safety and a Regional Veterinary Laboratory with an accessory laboratory in S. Miguel. The RDARD contributes to the definition of regional policy in the following areas: agriculture and livestock, industry and related activities, rural development, and agricultural training. The As far as animal health is concerned, the Directorate of Veterinary Services is in charge of, the preparation and coordination of health protection actions inherent in surveillance, control and eradication of animal disease programmes; the protection of public health; the

management of databases and statistical analysis; the animal movements and animal welfare control.

The Regional Veterinary Laboratory performs the work of laboratory support to fulfil the responsibilities of the Veterinary Public Health Division and the Directorate of Veterinary Services. There are bacteriology and serology sections for the diagnosis of brucellosis.
In each island, there is a Service of the agrarian development with a veterinary division for Terceira and S. Miguel and one for S. Jorge, Pico and Faial.
For bovine brucellosis, there are:
- Official eradication plans in S. Miguel, Terceira and S. Jorge;
- Official Monitoring and Control plans in Sta. Maria, Graciosa, Pico, Faial, Flores and Corvo (OBF islands - Decision 2009/600/CE).

There are brucellosis specific risk factors associated with the livestock production system (pastures limited by small stone-walls, natural pounds, calving and milking in pastures, common paths for cattle) as well as with the Azorean ecosystem (average temperatures: 15.2-21.2ºC; relative humidity: 80-85%; rainfall: 133.5-336.5 mm; sunlight: 83-585.3 h).
Since the 2000s, there has been an increased incidence rate of brucellosis, in animals and herds, in the islands of S. Miguel, Terceira and S. Jorge. In 2002, the rate of animals affected reached 4% in Terceira Island. **Figure 16** gives the evolution of the numbers of cattle submitted to brucellosis testing and to vaccination, as well as the percentage of positive animals (1990-2011).

Figure 16. Evolution of brucellosis in the 3 islands under the eradication plan (2002-2013).



The strategy of the eradication plans is based on both the slaughter of infected animals and the RB51 vaccination (Decision 2002/598/CE) in order to break up the transmission chain.

The main measures applied in the 3 islands under eradication plan are as follows:

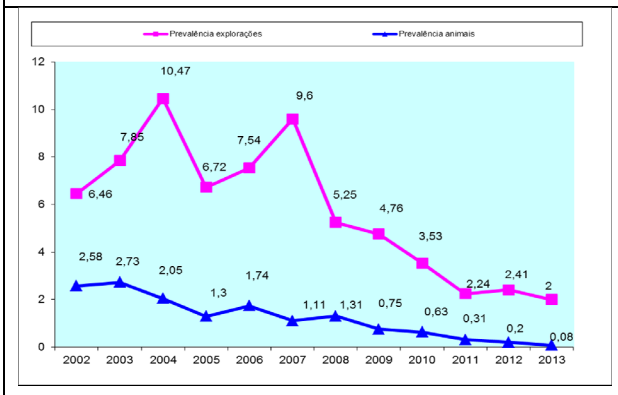
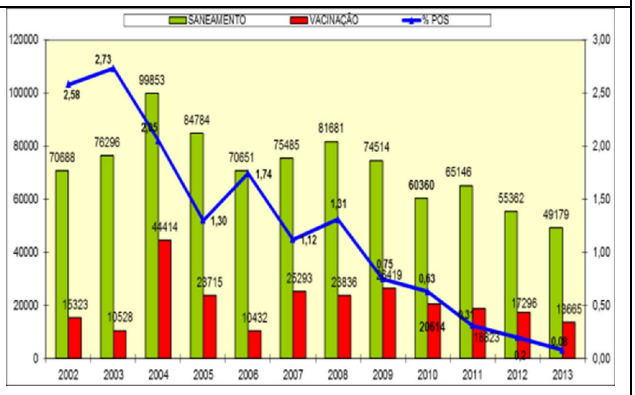
- Animal identification through computer systems and sanitary classification of herds (PISA.net);
- Serological testing (RBT screening and CFT confirmatory tests) to every animal over 12 months of age– according to the herd classification;
- Milk ELISA as screening test 4 times/year;
- Epidemiological investigations in positive herds;
- Slaughter of positive cases (and the offspring <12 months) and, if necessary, depopulation;
- Collection of samples from the slaughtered animals with *Brucella* culture, identification and typing;
- Animal movement control and pre-movement tests with special focus when animals move from one island to the other;
- Meetings with private vets and dairy professionals in order to alert them to the importance of the brucellosis eradication;
- Organisation of further professional training to the technical staff and the farmers;
- Disinfection of the farms and the animal transportation vehicles;
- Keeping mass vaccination of the cattle population, with RB51.
- Specific requirements for the use of the RB51 vaccine:
  - administration in all bovine herds in S. Miguel; Terceira and S. Jorge Islands;
  - vaccination of all cows > 4 month old, regardless of their pregnancy condition ;
  - animal identification in accordance with the current national legislation
  - compulsory information to the directorate of Public Health about the administration of RB51 underlining its resistance to rifampicin.

The main results obtained in the three islands with this strategy are shown in the following **Figure 17**.

Figure 17. Evolution of brucellosis in the 3 islands under the eradication plan (2002-2013).

a.: Evolution of the herd and animal prevalence rates;

b.: Cattle submitted to brucellosis testing and vaccination and animal prevalence of brucellosis.

a	b
	
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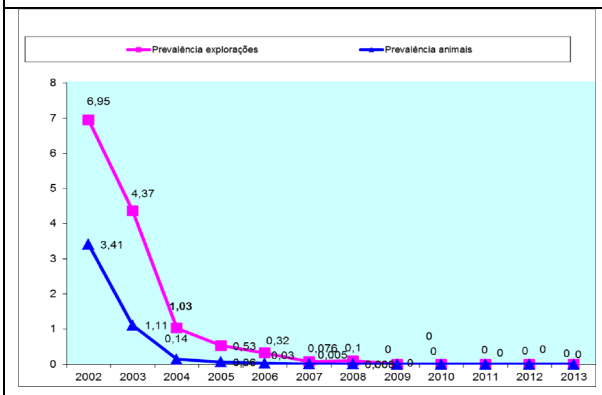	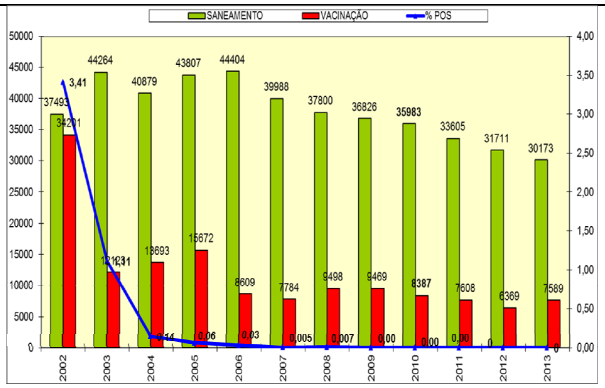
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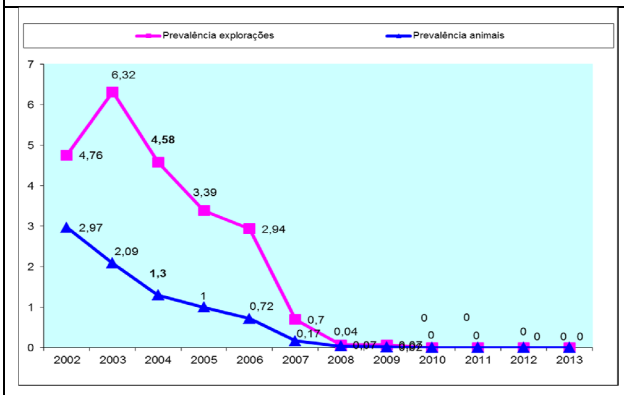
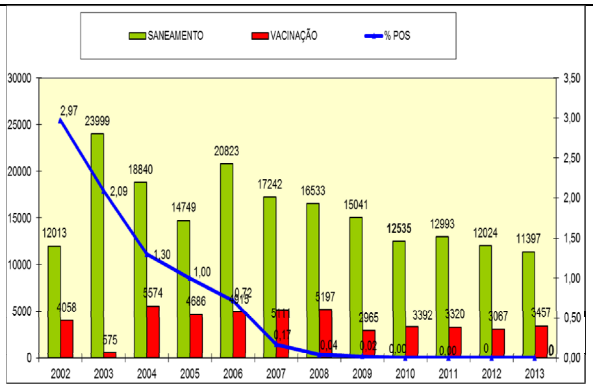
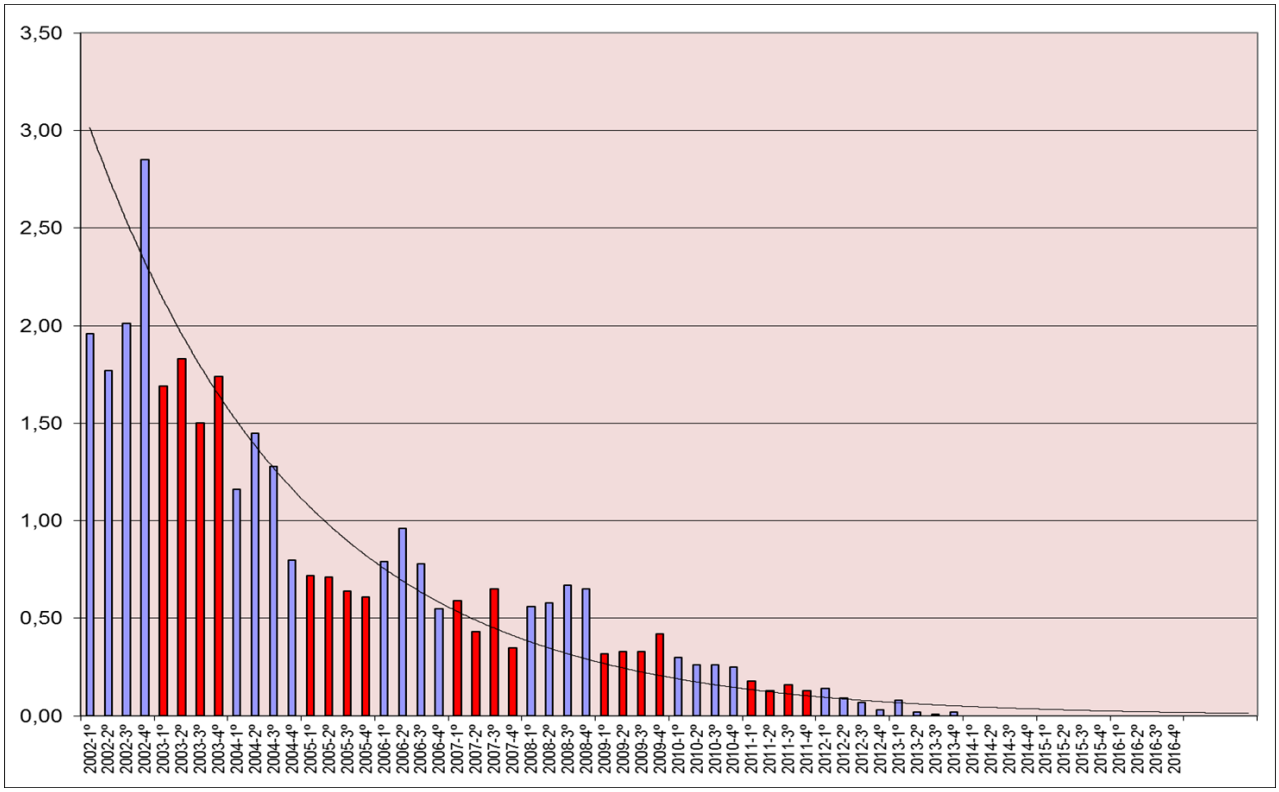
	
S. Jorge	

Eradication is therefore reached in Terceira and S. Jorge, while in S. Miguel infection remains present, but at a very low level. It is expected to maintain the strategy until the eradication. The global evolution for the archipelago of Azores is shown in **Figure 18**. Eradication is therefore expected for 2016.

Figure 18. Evolution of brucellosis in the archipelago of Azores.



7. Organization of the Veterinary Services of the Norte Region – Food and Veterinary Department of the Norte Region - DSAVRN.

Dr. Alfredo Sobral, Head, Veterinary Services of the Norte Region - (DSAVRN).

The Northern Region includes six districts and has the following staff working for the brucellosis eradication programmes: 7 senior officers (veterinarians), 96 Veterinarians, 72 Technical Assistants. Each district has a local veterinary service and, at Regional level, there is the Chief of the DSAVRN and a Regional Animal Health Coordinator. This Region also has a 'Management Unit' for the supervision of the activities concerning the eradication programmes. This Unit comprises all 8 responsible at Regional and local level and the animal health group of DSAVRN. Among its responsibilities is the evaluation of sanitary programmes proposed by the 41 OPP, its monitoring and final evaluation.

For its organization DSAVRN developed a system for documentation and procedures management – Smartdocs – which includes 71 profiles, several of them dedicated to the brucellosis eradication programmes. The system allows access in real time and everywhere to documents and procedures management, the control of progress of activities and the monitoring of objectives.

DSAVRN developed a strategic planning for the period 2007-2013, which includes the establishment of objectives, the definition of strategies, resources and activities as well as the identification of indicators for control. During the first phase of this planning there was a stakeholder analysis with the identification of internal and external parties and their role, as well as a SWOT analysis. The internal strong points were the data management systems

available: SNIRA (animal identification and movement) and PISA.net (programmes activities and classification of herds/flocks) and the good training of the Veterinary Services (human resources); the internal weak points were the organization of Veterinary Services and a deficient information flow, the lack of proper follow up of OPPs and acquired behaviours. At the external point of view, the strong points refer to the liaison with other entities as the police forces, the OPP, the farmers associations and the abattoirs; the weak points were the animal movement and behaviour of farmers. Following this analysis, a strategy was established (definition of objectives, suit activities to objectives, standardization of decisions and actions by local units [DAV] and information of all actors on activities) and resources were identified (human, material, financial and IT).

For the Brucellosis Eradication Programmes, the activities to improve the quality of the programme included the annual evaluation and approval of OPP sanitary plans by the Management Unit, visits to OPPs for Official Control, monitoring of programme activities (both from OPPs and vet services), training of other entities: law enforcement services, Sanitary Inspection services, Universities. Other activities included information and awareness, especially to farmers and associations, as well as regular meetings with OPPs, Health Services and Municipal Services. The evaluation of sanitary programmes submitted by OPP is made in detail and programmes are approved only when the requirements of the official Veterinary Services are met. In the same line, final reports are approved for financing when programmes are accomplished or cabal explanation is provided on the deviations from the plan. OPP are also visited for activities monitoring, 110 visits were made in 5 years for the 41 OPPs. No visits were made in the last 2 years. The non-compliance by OPP to the activities of the programme identified by the official services are notified and discussed with the partners and corrective measures adopted.

The Smartdocs profiles were developed in order to trace the complete history of the subjects and intervening parties, as well as for the recording up-to-date, thus allowing standardization of procedures and monitoring, the digital storage of documents and their security and confidentiality. For the brucellosis programmes, profiles allow an easy assignment of Sanitary Classifications, the automatic prevision for the next re-inspection time, and the assessment of the sanitary situation and of OPP performance, warnings and alerts.

Several profiles were presented, namely the “Isolation of infected herds”, “Bacteriology”, “Sanitary Slaughter”, “Traceability”, “Law enforcement Processes”. Two examples of law enforcement with total of compulsory stamping out were presented.

8. Bovine brucellosis vaccination programme in North region –Food and Veterinary Department of the Alentejo Region - DSAVRN.

Dr. Ana Paula Figueras, Veterinary Services of the Norte Region - (DSAVRN).

The speaker first presented a general panorama of the implementation of the eradication programme in the region, and then the revision of the vaccination programme currently conducted in hot-spots areas. Finally, the speaker presented the current epidemiological picture of Bovine Brucellosis in the region.

8.1. Outline of the Eradication Programme

The implementation of the Brucellosis Eradication Programme is based on the monitoring of the evolution of disease epidemiology as well as on setting annual targets and intermediate milestones. General objectives of the programme and legal basis were commented.

The annual checks are organized on the basis of a first proposal made by the Breeder Organizations of the region, signed by their private veterinarian coordinator representatives. The proposal must be fully in line with EU and National rules, as well as with the framework defined by the Portuguese Eradication Programme annually approved by EU Commission. Once the proposal is made, it is revised by a management team at the Regional Veterinary Services, which may approve it or may ask for amendments, if necessary. The Breeder Organization is after responsible for the implementation of field activities (animal identification, vaccination and sampling) in all the holdings under their competence. The activities are carried out by private veterinarians directly contracted by the association, under the supervision of the veterinary coordinator. The management team at the Regional service will externally monitor the process with the help of the Identification and Registration System (SNIRA) and Animal Health Software (PISA). Audits consist on checks on the spot, but no details were offered on their performance.

The sero-surveillance is based on individual blood sampling of animals and on bulk milk sampling in dairy herds. The confirmation of infection is done by bacteriology testing.

Screening of the disease in dairy herds is based on milk testing. In year 2012, 1,331 holdings and 51,143 animals were checked following this scheme and only 1 positive herd was detected. In year 2013, 2,818 holdings and 75,803 animals were checked and 2 positive herds detected.

The sanitary measures adopted when an outbreak is detected, as well as the testing regime for the requalification/status restoring of herds, were commented:

- Requalification of herds affected by a disease outbreak: it is done after 4 checks with negative results carried out within a timeframe of 8 months after the removal of positive animals
- Restoring of B3/B4 herds with suspended status: it is done after 2 checks with negative results carried out within a timeframe of 3 months

The identification of positive animals is carried out by the official veterinary services without revealing the identity of individuals in advance. The target for the removal of positive animals has been established in one week after the official marking. The transport to the abattoir is carried out by special services contracted after annual procurement procedures.

In 2013, 76% of positive animals were slaughtered within 15 days after the official identification, and the 84% within 30 days. These figures suppose a backward movement from the previous year. In 2012, 82 % of animals were slaughtered within 15 days after the official identification, and 98% within 30 days.

The epidemiological investigation is made with an harmonised questionnaire. In 2013, 17 outbreaks underwent this procedure. The outcome is summarised as follows:

Likely origin/source of infection (n=17 herds)

- Direct contact with ruminants from other holdings:
  - Bovines: 9
  - Small ruminants: 7
- Contact with other holdings of the same farmer: 1
- Introduction of animals:

- From other holdings: 13; other origins: 1
    - Non-compliance with pre-movement testing: 10
- Sharing of pastures: common pastures: 9, transhumance: 1
- Recurrence: 1
- Inconclusive: 2

The general rules presented for taking stamping out decision were the following:

- When there is no improvement of the sanitary classification of the holding or epidemiological unit within 12 months
- When the epidemiological conditions of the geographical area advise stamping out as the most adequate decision to improve the situation
- When it is not possible to adopt prophylactic and control measures in the epidemiological unit
- When there is bacteriological isolation of *Brucella*.

8.2. Special vaccination programme in hot-spot areas

The vaccination programme, based on the use of RB51 vaccine, is currently conducted in a number of municipalities where the standard programme did not succeed in the past, and high prevalence and incidence were recorded year by year. Main features and outcome of such programmes are summarized below.

Municipality of Montalegre:

- Starting year of the vaccination programme: 2005
- Protocol of vaccination applied: vaccination of young and adult females
- Number of vaccinated herds/animals: 1,035 herds and 7,334 animals (2005); 211 herds and 711 animals (2013)
- Additional measures: reinforcement of the eradication programme
- Results achieved:
    - Evolution of the prevalence rate: 4.8% (2005) to 0.0% (2013)
    - Evolution of the incidence rate: 1.6% (2005) to 0.0 (2013)

Municipality of Vieira Do Minho:

- Starting year of the vaccination programme: 2010
- Protocol of vaccination applied: vaccination of young and adult (non-pregnant) females in non-B3/B4 holdings. In B4 holdings, vaccination of young females
- Number of vaccinated herds/animals: 17 herds and 247 animals (2010); 53 herds and 169 animals (2013)
- Additional measures: reinforcement of the eradication programme
- Results achieved:
    - Evolution of the prevalence rate: 15.8% (2010) to 0.0% (2013)
    - Evolution of the incidence rate: 8.8% (2005) to 0.0 (2013)

Municipalities of Ribeira da Pena and Boticas:

- Starting year of the vaccination programme: 2009
- Protocol of vaccination applied: vaccination of young and adult females in hot spot parishes (Limões and Alvadia). Same regime in non-B3/B4 holdings of the rest of parishes, but vaccination of only young females in B3 and B4 holdings
- Number of vaccinated herds/animals: 108 herds and 630 animals (2009); 106 herds and 223 animals (2013)
- Additional measures: reinforcement of the eradication programme
- Results achieved:
    - Evolution of the prevalence rate: 12.5 % (2009) to 0.5% (2013)
    - Evolution of the incidence rate: 7.9 % (2005) to 0.0 (2013)

Contiguous parishes to the Municipalities of Ribeira da Pena and Boticas:
Cabeceiras and Mondim da Basto:

- Number of vaccinated herds/animals: 21 herds and 123 animals (2010); 55 herds and 97 animals (2013)
- Results achieved:
  - o Evolution of the prevalence rate: 6.2 % (2010) to 1.0% (2013)
  - o Evolution of the incidence rate: 4.0 % (2010) to 1.0 (2013)

Vila Pouca de Aguiar and Vila Real:

- Number of vaccinated herds/animals: 55 herds and 165 animals (2010); 52 herds and 174 animals (2013)
- Results achieved:
  - o Evolution of the prevalence rate: 6.7 % (2010) to 6.5 % (2013)
  - o Evolution of the incidence rate: 5.1 % (2010) to 4.8 (2013)

  This case is by the moment the only exception to the favourable evolution of the disease in vaccinated areas

The abortifacient effect of RB51 vaccine is monitored by the investigation of abortion. As main conclusion, the use of RB51 vaccine in hot-spot has revealed as a good complementary tool in combination with a strict implementation of testing and slaughter.

8.3. Overall situation of the Programme in the North Region

Finally an overall picture of the evolution of the Eradication Programme in the North Region was presented, as summarized in **Table 3**.

Table 3. Portugal, evolution of the Eradication Programme in the North Region.

DSAVRN Bovine brucellosis	No. of Holdings	No. of Animals	Prevalence in Holdings	Incidence in Holdings	Stamping out
2007	26.124	217.558	0,32 %	0,22 %	12
2008	23.905	218.193	0,45 %	0,32 %	11
2009	23.802	225.571	0,71 %	0,5 %	8
2010	23.265	216.540	0,59%	0,4%	8
2011	20.859	211.853	0,56% (115)	0,4% (90)	4
2012	19.361	176.644	0,23% (43)	0,17% (35)	2
2013	18.270	152.164	**0,15% (28)**	**0,11% (21)**	1

In 2013, the disease concentrated in the municipalities listed in **Table 4**.

Table 4. Portugal, Municipalities most affected in north Region.

District	No. of positive Holdings	No. of positive Animals
Braga	4	13
Bragança	1	3
Porto	2	2
V. do Castelo	2	2
Vila Real	**18 (15 VR) ***	**48 (38 VR) ***
Viseu	1	1
Total	28	69

* Municipality of Vila Real

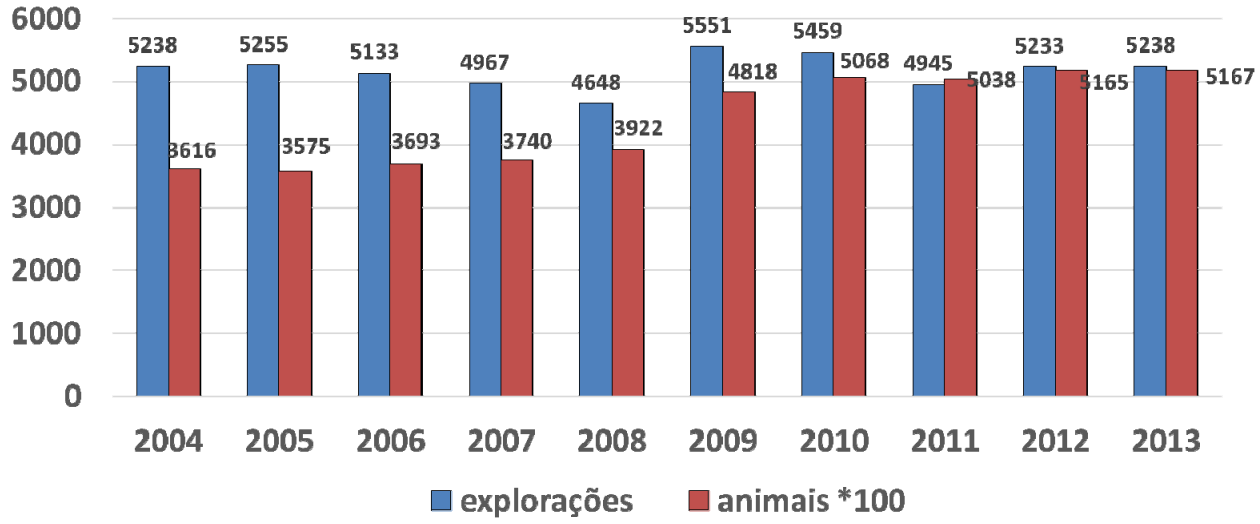
9. Bovine brucellosis vaccination programme in Alentejo region –Food and Veterinary Department of the Alentejo Region - DSAVRALT.

Dr. Maria Do Carmo Caetano, Veterinary Services of the Alentejo Region - (DSAVRALT).

The vaccination programme with RB51 was introduced in 2008 for large herds suspected of being infected. An epidemiological assessment of all herds with positive tested animals was carried out in order to select the holdings to be vaccinated. The decision was based on the epidemiological survey, the laboratory results and the size of the herd.
The RB51 vaccination was implemented in several areas of the Alentejo Region due to the lack of success of the implemented strategy, the characteristics of production system and the possibility of considering each farm as an epidemiological unit due to its large dimension and lack of contacts with other herds (farms are fenced).
The programme aimed at the reduction of the incidence of positive cases, the reduction of abortions due to *Brucella* and to reduce the contamination of the environment. It was expected that the emergency vaccination of adults in these herds would have influenced the incidence of brucellosis in the area dramatically in a very short time.
Further reasons for the implementation of a Bovine Brucellosis vaccination programme with RB51 in the Alentejo Region were:
1. Unsuccessful implementation of the classical eradication strategy (test and slaughter)
Very often farmers did not agree with the implemented policy and strongly opposed stamping out policy. Re-infection occurred frequently in holdings previously depopulated. Also contamination of the environment by *Brucella* was suspected. Another important point that led to the decision of implementing a vaccination programme was the high cost for a test and slaughter/stamping out policy.
2. Characteristics of husbandry in the holdings in the Alentejo Region
Most of the holdings to be vaccinated have cattle of various breeds and cross with the so-called “exotic breeds”. Many herds frequently sell weaned bovines (5-7 month of age) to other holdings.
3. The classification of each holding as a single epidemiological unit.

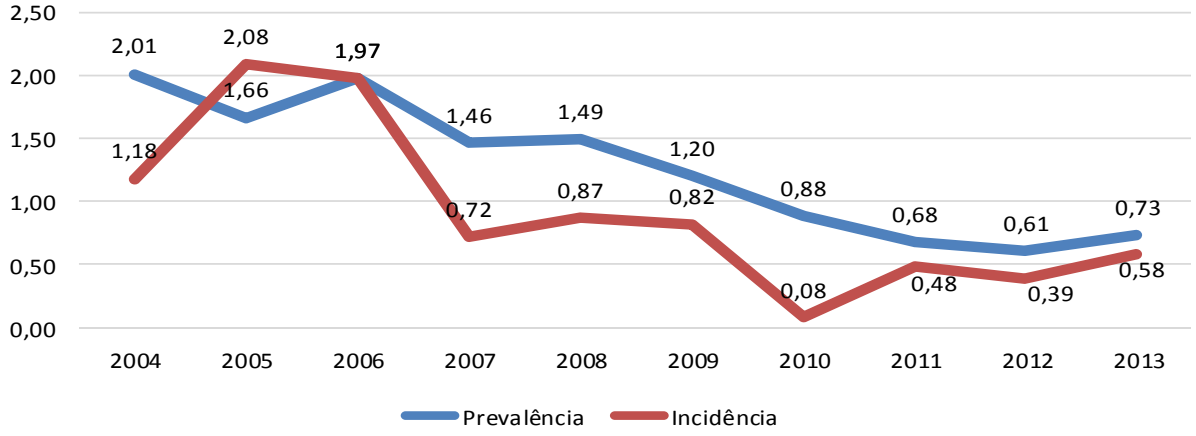
The implemented strategy led to the frequent stamping out of herds but with recurrence of disease after the re-introduction of animals which indicated environmental contamination. This strategy had high costs for the vet. services and for the farmers.
The production system in Alentejo is mainly extensive with predominance of medium and large herds kept for meat production. These large epidemiological units allow the close evaluation and monitoring case by case, through a protocol established with the farmer. They also allow the control at source of the environmental contamination, as well as the adaptation of the sanitary strategy to the specificities of the Region.
Alentejo presents a stable number of cattle herds (5,238 in 2013) and bovines (516,700 in 2013). This is the Region with the highest number of number of cattle in Portugal and their numbers increased slightly during the last years (see **Figure 19**).

Figure 19. Total number of cattle and herds in the Alentejo Region.



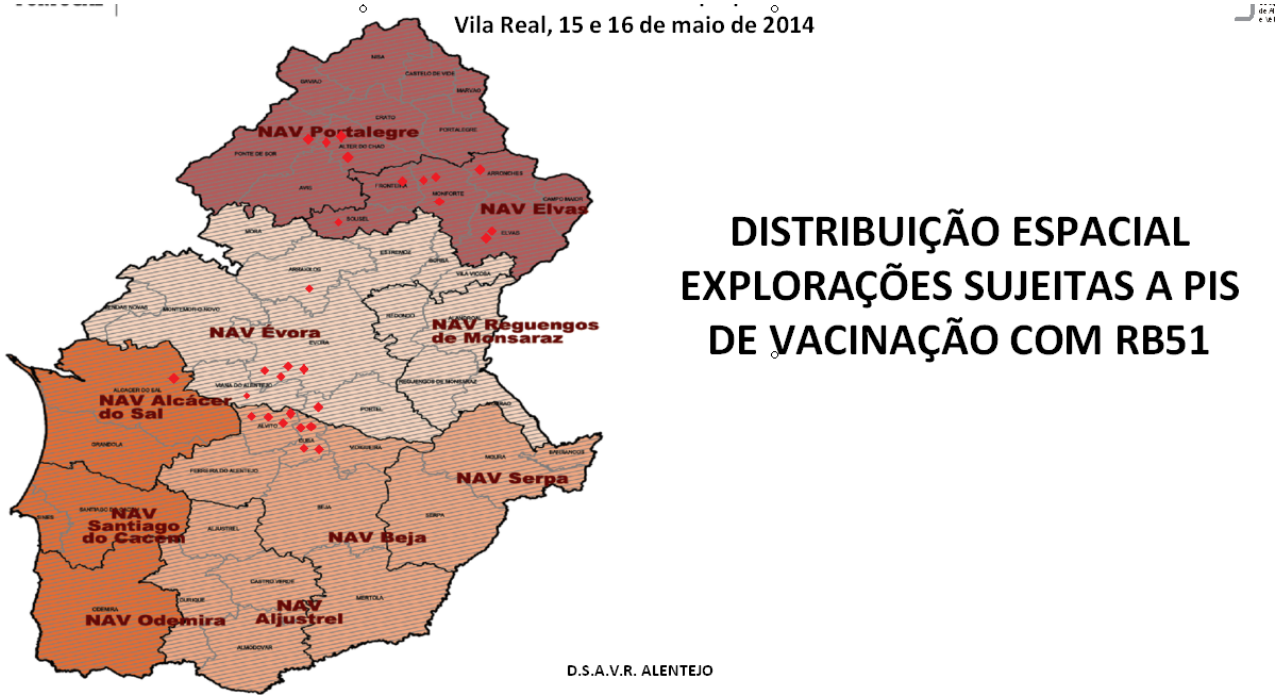
Most animals are kept in an extensive or semi- extensive way. The brucellosis prevalence and incidence trends are presented in **Figure 20**. Incidence and prevalence showed a positive progress during the last years, except for a light increase in 2013.

Figure 20. Evolution of prevalence and incidence of bovine brucellosis at herd level in Alentejo



In several problematic areas, protocols are implemented for the introduction of RB51 vaccination. The programme is designed to extend for five years. The RB51 vaccine is used in a dose of 10-24 x 10^9 UFC (2 ml), administered by subcutaneous injection on the side of the neck. These protocols are a written compromise between farmers, the OPP and DGAV, with permanent monitoring and evaluation. The protocol includes the following scheme:
- first vaccination of all females over 4 months of age (males are not vaccinated);
- revaccination of females (previously vaccinated at 4-6 months of age) 4-12 months after the first vaccination round;
- in following years, vaccination of replacement females (only one inoculation) and of all acquired females;
- electronic identification of vaccinated females (double ear tag and a ruminal bolus).
The vaccination is recorded on their individual passport and also in the National Animal Health database (PISA.Net).
From the 10 local vet services in Alentejo, five presented herds with vaccination programmes (**Figure 21**).

Figure 21. Distribution of bovine holdings under the vaccination programme with RB51.



In the year 2008, eight herds started the vaccination programme. In 2009, another 15 herds joined the programme, plus two in 2010. In 2011 there was no new herd included, in 2012 there were four new herds and in 2013, no new herd. This totals 29 herds currently under the vaccination programme, 15 of which have already finished vaccination (**Table 5**). From these 29 herds, 2 were extinguished, one is B4, 22 are B3 and only four did not yet qualified. In two holdings stamping out was implemented and in 13 holdings vaccination was suspended. In most of cases, the origin of infection was not identified. In six holdings *B. abortus* was isolated.

Table 5. Number of vaccinated bovines per year

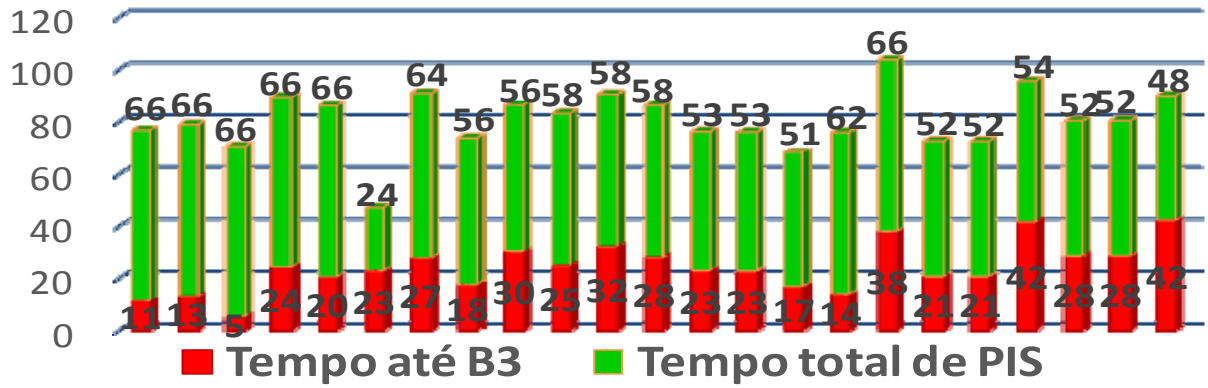
Year	Vaccinated adult animals	Vaccinated young animals
2008	1701	71
2009	3248	293
2010	1494	806
2011	791	477
2012	1130	880
2013	170	702
Total	**8534**	**3229**

In the six years of vaccination, there were 8,534 adults and 3,229 young females vaccinated. The average time for one of these infected herds to qualify as B3 was 24 months, varying from 5 to 42 months. The vaccination programme is maintained after a qualification for 4-5 years.

The strong points described by the speaker on the application of RB51 vaccination in Alentejo are the possibility to decrease the environmental contamination, to avoid the contagion cycle, to reduce the costs of stamping out, and to reduce the costs of extensive blood sampling and analysis.

It is critical to implement such a programme to establish a long-term compromise with the farmer, have special requirements for the animal movement between B3 and B4 farms. At present the time for a B3 herd to qualify as a B4 herd is too long. The period of time necessary to reach the OBF status after vaccination is, in average, 24 months (**Figure 22**).

Figure 22. Necessary time (in months) to achieve OBF status.

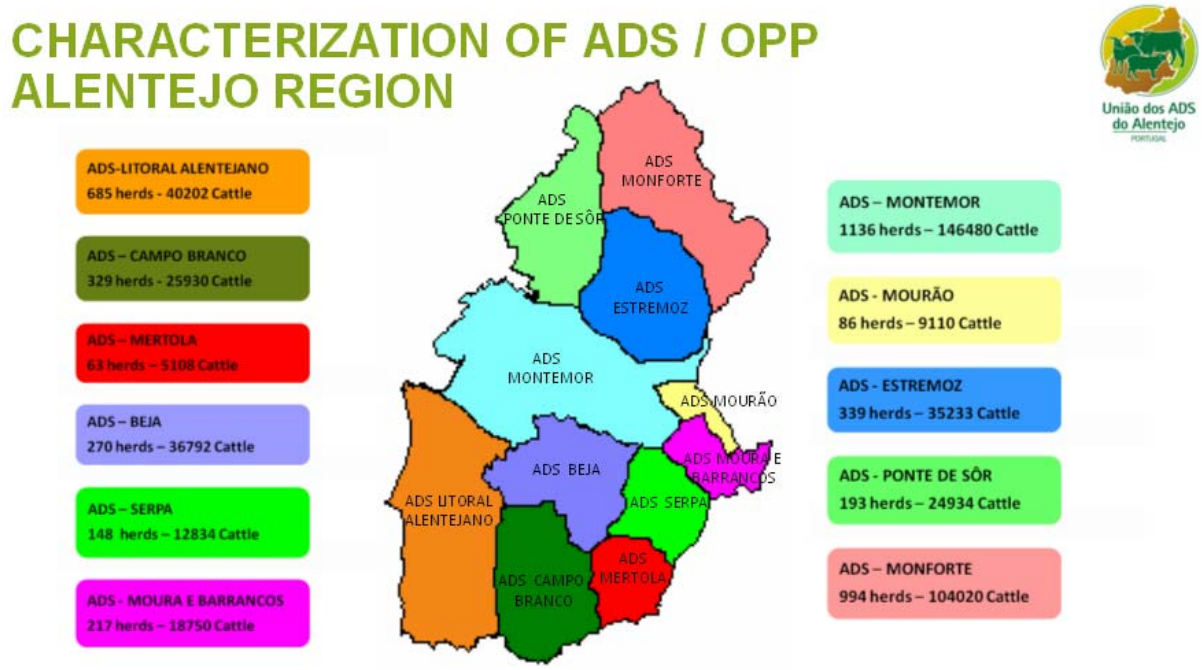


10. Field implementation of the bovine brucellosis eradication programme - Farmers Organization (OPP) of the Alentejo region.

Dr. Ana Rita Simões, Union of the Farmers Organization of Alentejo.

The Alentejo region is divided among 11 Farmers Associations (OPP/ADS), Mértola, Montemor-o-Novo, Ponte de Sôr, Beja, Estremoz, Monforte, Castro Verde, Serpa, Mourão, Litoral Alentejano and Moura. There are four laboratories providing services to OPPs in the Alentejo Region (**Figure 23**).

Figure 23. Alentejo Region – OPP / ADS.



The OPP/ADS have an important role in the animal health system:

- Disease control and eradication (
- **Table 6**)
- Animal movement at national and Community trade
- Dissemination of standards for the maintenance of hygiene & sanitary conditions
- Surveillance of animal welfare
- Preservation of consumer confidence
- Response capacity against emerging diseases and sanitary crises
- Technical support to producers aiming the economic viability.

The OPP/ADS consist in a direction, a technical team formed by a veterinary coordinator (MVC) and several veterinary performers (MVE). The OPPs are in charged from DGAV to perform implementation of routine testing and surveillance in the field. Furthermore, OPPs perform a range of other services like various other prophylactic measures, identification, training for producers and MVE, compulsory records at the farm (RED) etc. The MVE (except ADS Mértola) are chosen by the farmer. In the ADS/OPP of Alentejo Region a total of 11 MVC are working; their tasks are the following:

- Prepare the annual programme to submit to the direction of OPP
- Coordinate and ensure the proper implementation of the planned actions in the field
- Prepare technical reports

- Inform DGAV on health risk situations / animal turnover**.**

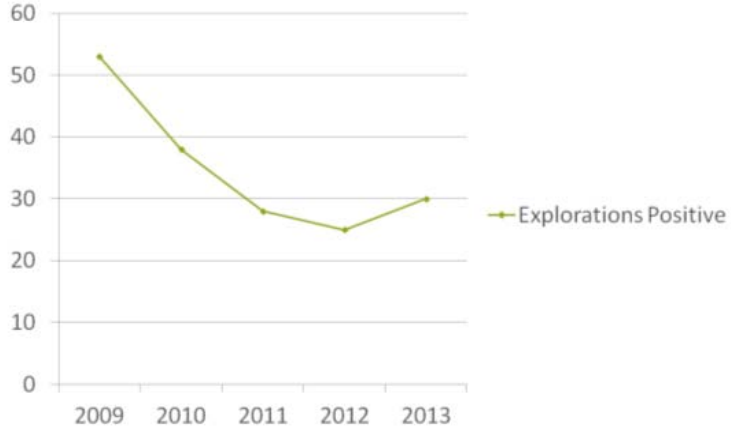
There are 254 MVE in ADS/OPP of Alentejo Region, they are responsible for:
- Execution of the sanitary programme
- Contribution to the improvement of hygiene, sanitary conditions and animal welfare
- Information of the MVC about the irregularities and difficulties of their tasks
- Execution of pre– movement tests (validity of 30 days)
- Implementation of vaccination with RB51.

Table 6. Bovine Brucellosis testing scheme in the Alentejo Region.

DAV municipality	Herd Status	Testing scheme
Alentejo Litoral Alcácer do Sal Grândola Santiago Cacém Sines Odemira	B4	Blood sampling in animals > 24 months
	B2 e B2.1	Blood sampling in animals > 6 months
	B4S	Blood sampling in animals > 12 months
Other municipalities of Alentejo	B4/B4S B3	Blood sampling in animals > 12 months
	B2 e B2.1	Blood sampling in animals > 6 months

The number of positive herds increased from 2012 (25) to 2013 (30). Out of the 30 positive herds found in 2013, 24 herds were new positive bovine herds.

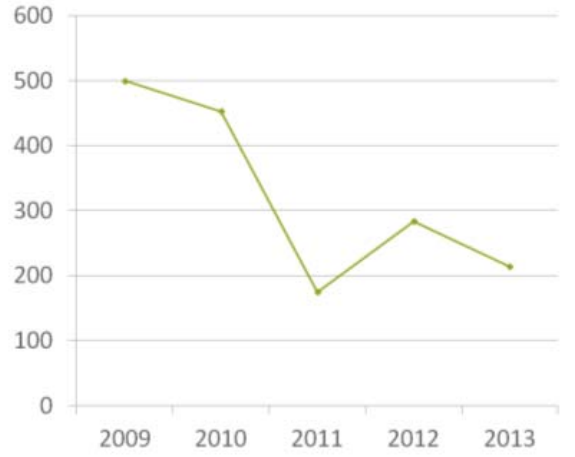
Figure 24. Number of positive herds in Alentejo Region



	HERDS	
	Controlled	Positive
2009	4385	53
2010	4671	38
2011	4134	28
2012	4098	25
2013	4134	30

In most cattle herds only a few animals tested positive. Only in one herd (with a high number of positive animals) stamping out was carried out.
The number of positive tested animals decreased in year 2013 respectively to 2012 (**Figure 25**). Positive herds without a confirmation of infection are re-tested twice (first testing after 30 days, the second after 60 days).

Figure 25. Number of positive animals in Alentejo Region.



	Animals	
	Controlled	Positive
2009	437152	500
2010	400646	453
2011	405373	175
2012	400229	284
2013	401334	214

11. Sheep and goat population characterization – DSPA

Dr. José Neves, Veterinary Services - Animal Protection Department (DSPA).

In Portugal, there are about 2,021,000 sheep and 329,000 goats (2,350,000 in total) in 33,000 holdings. The two thirds of holdings are mainly situated in North and Central regions, but half of the total animal population is found in Alentejo region. The 59% of the holdings consists only of sheep, the 18% only of goats, and the 23% is mixed. The orientation of breeds is mainly the meat production (89%), followed by dairy production (11%) and wool production (0.2%). Besides the cross breeds, which are common and diffused, the main sheep breeds are Merino, Galega Bragançana, Bordaleira Entre Douro e Minho, Campaniça and the main goat breeds are Serrana, Bravia, Murciana Granadina, Serpentina, Saanen, and Algarvia.

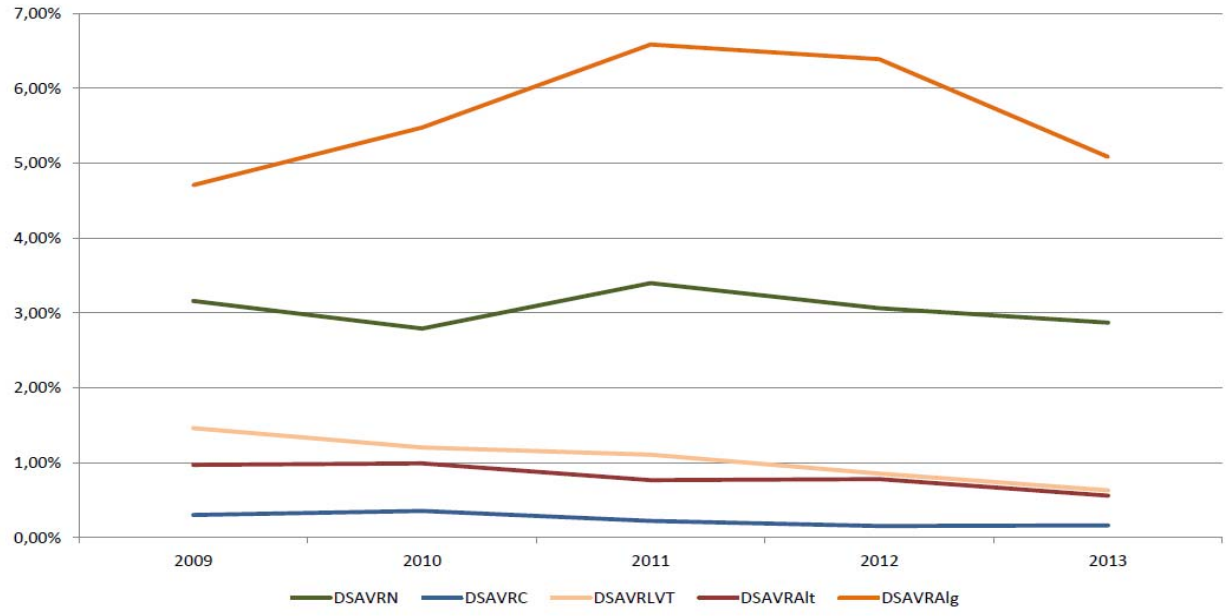
12. Sheep and goat brucellosis eradication programme in the Mainland /evolution – DSPA

Dr. Miguel Lemos Fernandes, Director, Veterinary Services - Animal Protection Department (DSPA).

The speaker started highlighting the role of partners involved in the implementation of the programme: breeder associations (OPPs, implementing field activities), the regional veterinary services (Regional Food and Veterinary Departments-DSAVR, supervising activities), and the central authority (Food and Veterinary Directorate –DGAV, with the main task of coordinating the whole process).
In 2013, 62,497 flocks and 2,227,202 heads were under the programme. The general strategy was test and slaughter of positive animals, complemented by vaccination in regions or areas with adverse evolution of the epidemiological situation (Regions of Trás-os-Montes and Algarve, and hot-spots distributed along the mainland). Currently, Rev.1 vaccine is used in young animals (3-6 months old).

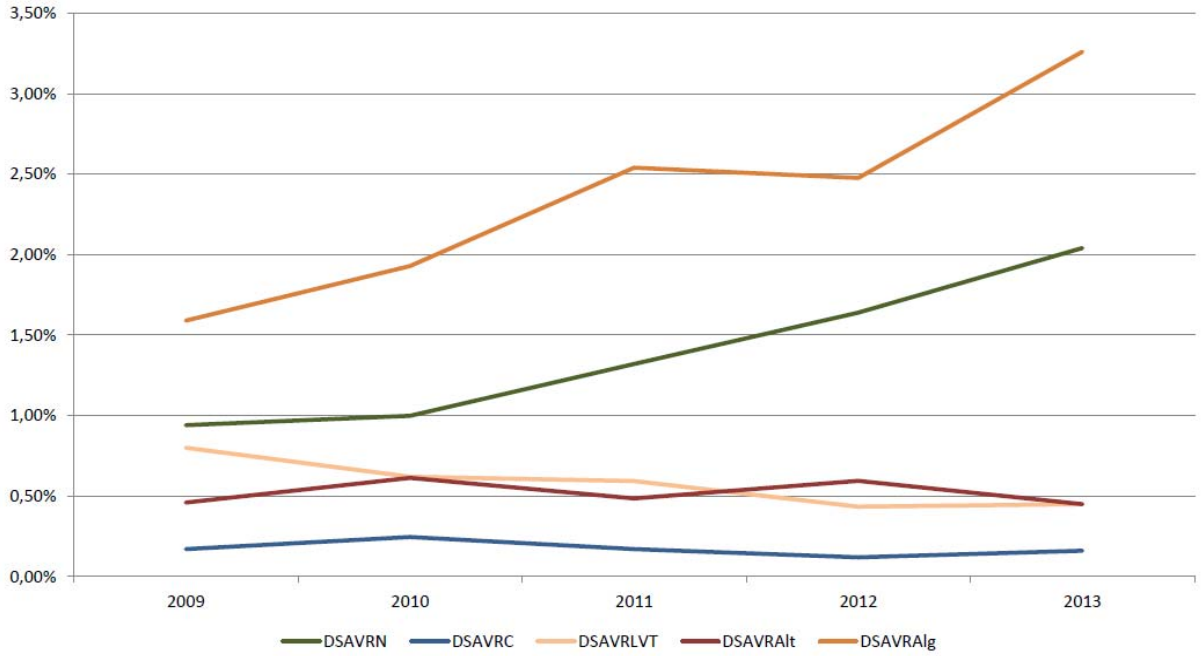
Sampling is carried out by the OPP in about 99% of the flocks and by DSAVR in the rest of cases.
For deciding about animal slaughtering, RBT and CFT are interpreted in series or in parallel depending on the health and vaccination status of the flock. The decision of stamping out is made by the regional service, based on criteria as the lack of improvement in the epidemiological situation in last 12 months, lack of biosecurity measures in the flock, or when confirmation of infection is made by *Brucella* isolation.
The number of positive flocks has steadily decreased in the last 5 years: 919 positive flock detected in 2009 against 672 in year 2013. Bacteriological investigation is routinely performed in every new outbreak. The infection was confirmed in 442 flocks in 2009, and in 170 flocks in 2013.
The flock prevalence dropped slightly from 1.35% in 2009 to 1.10% in 2013. On the contrary, the flock incidence increased during the same period from 0.51% in 2009 to 0.80% in 2013, suggesting that measures in place failed to stop disease spreading (at least in some areas).
The number of positive animals in 2009 was 7,940 (animal prevalence = 0.41%) versus 3,540 animals in 2013 (animal prevalence = 0.23%).
The evolution of the disease is different when different regions are compared. The infection remains relatively high in Algarve (up to 5%) and Trás-os-Montes (up to 2%) (**Figure 26**). Both regions are subjected to special vaccination programmes.

Figure 26. Sheep and goat brucellosis eradication programme – Flock prevalence / departments (2009-2013)



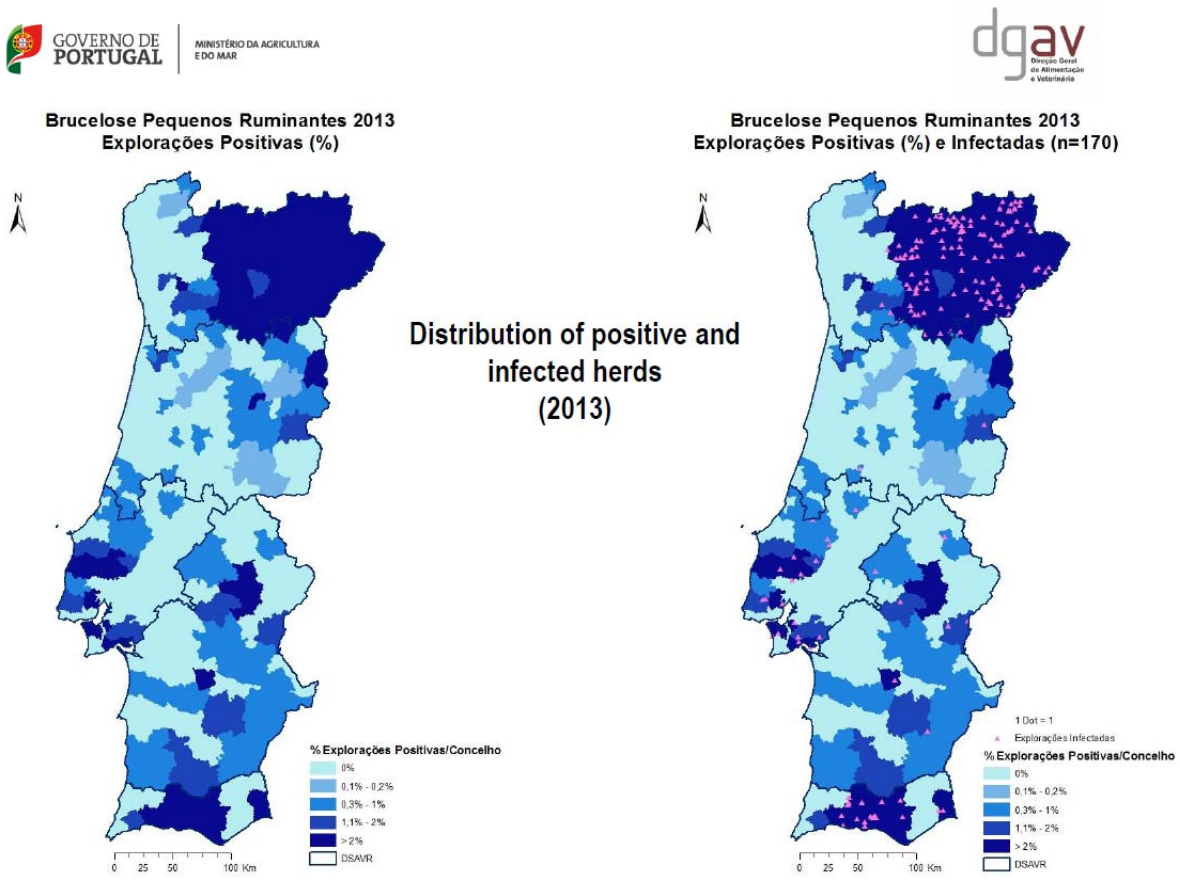
The panorama worsens when the incidence rate is taken into account: in both regions the incidence has increased constantly since 2010 (**Figure 27**), suggesting that the vaccination applied in both territories did not achieve the expected results.

Figure 27. Sheep and goat brucellosis eradication programme – Flock incidence / departments (2009-2013)



Finally, the current picture of the disease in the Mainland is mapped in **Figure 28**:

Figure 28.



13. Sheep and goat brucellosis vaccination programme in Trás-os-Montes / Northern region – DSAVRN

Dr. Ana Paula Figueras, Veterinary Services of the North Region - (DSAVRN).

The speaker showed the DSAVRN programme as in line with the EU regulations and with the subsequent national regulations.
Manuals supporting the programme in DSAVRN are the following:

- Manual of procedures – Management of small ruminant holdings under isolation due to brucellosis
- Handbook on Sanitary Slaughter
- Handbook on Stamping Out
- Standards for the management of holdings under isolation

The programme includes the following measures:

- Annual survey
- Sanitary isolation of positive holdings or epidemiological units
- Classification of Holdings / Re-inspections
- Sanitary slaughter of positive animals
- Epidemiological surveys and outbreak investigation
- Stamping out of infected holdings or epidemiological units and Disinfection
- Vaccination
- Milk commercialization control
- Notification of the Health Authority and follow-up of human cases.
- Annual survey and stamping out procedures are in line with those applied at national level
- Sanitary isolation of positive holdings

Data are recorded in “SmartDocs by the veterinary services on the day of collection of positive animals for slaughter. The owner is informed (notification and explanation). Positive animals are branded by fire and in case of mixed holdings; cattle are isolated from sheep and goats.

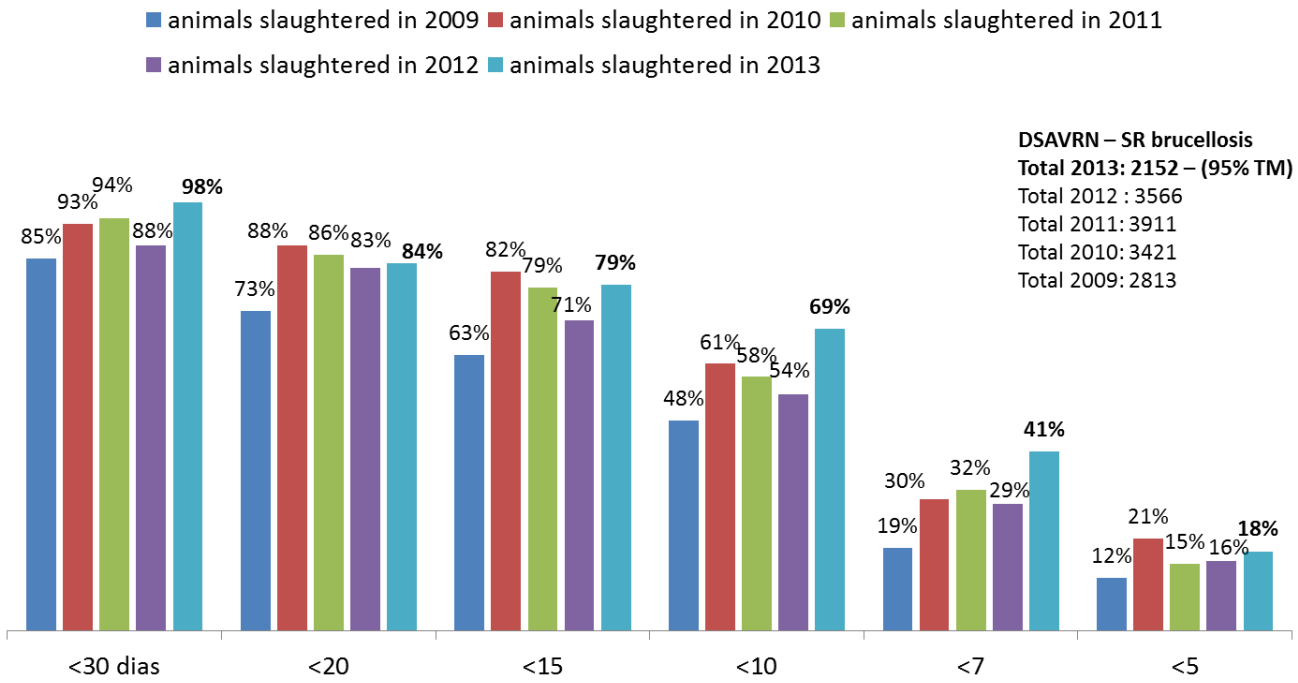
- **Classification of Holdings/Re-inspections**

In order to requalify the positive flocks as B3 or B4 flocks

- In B3S/B4S (B3 or B4 suspended) flocks: the first check is done three months after the slaughter of positives
- In B3S/B4S flocks with irregular practices: the first check is done immediately and a second check s done two months afterwards
- In B2 flocks: the first check is done two months after the slaughter of positives and a second check is done three months afterwards
- In B2.1 flocks: the first check occurs two months after the slaughter of positives, a second check occurs two months afterwards, a third check three months later and a fourth check three months later.

Positive animals are directly transported to approved abattoirs (public tender) where identification is checked by veterinary inspectors and tissues are sampled for laboratory examination (if animals are issued from B2 or B3/B4, B3S/B4S flocks). Compensation is paid by direct bank transfer from IFAP to the owner bank account on request of veterinary services through an electronic platform (ISINGA).
As shown on
Figure 29, the time between lab results and effective slaughter of positive animals has been reduced since 2009.

Figure 29. Evolution of time from lab results to slaughter in the DSAVRN.



The number of non-identified animals that were not collected for slaughter has also decreased from 2009 to 2013 (213 vs. 17 respectively).

- **Epidemiological surveys and outbreak investigation**

Epidemiological investigations in case of outbreak are performed by the Veterinary Services and the results (registered in SmartDocs) are analysed by the coordinator of the programme. As a consequence, stamping out may be decided and contact flocks investigated and re-inspected. In 2013, 108 investigations were performed for 291 outbreaks (*i.e.* 37%). The main risk factors identified for the 108 outbreaks investigated were, in 2013, “direct contact with other holdings” (n=75), “introduction of animals” (n=39) and “pasture sharing” (n=50). Recurrence was identified for 24 outbreaks and 29 investigations gave inconclusive results.

- **Vaccination**

The strategy is based on the vaccination of all sheep and goats aged 3-6 months with specific identification of vaccinated animals (tag, tattoo) and registration of vaccination, with the date, in PisaNet database. Animals are sero-tested at the date of identification and positives are slaughtered. Figures regarding the animals vaccinated from 2001 to 2013 are given in **Table 7**.

Table 7. Rev.1 vaccinated holdings and animals in DSAVRN (2001-2013).

Rev1 vaccination	Holding	Animal	Vaccinated holdings	Vaccinated adult animals	Vaccinated young animals	
2001	6.022	375.095	2.689	136.299		
2002	5.199	314.810	5.628	39.236	39.446	
2003	5.084	323.297	2.390	27.027	34.588	
2004	4.860	292.733	1.160	12.642	37.504	%
2005	4.851	302.859	1.786	-	29.221	9,6
2006	5.119	323.120	1.545	-	21.651	6,7
2007	5.367	320.121	1.907	-	27.848	8,7
2008	5.596	337.440	2.173	-	23.608	7,0
2009	5.710	314.758	2.274	-	24.618	7,8
2010	5.577	307.502	2.619	-	29.578	9,6
2011	5.234	313.669	2.934	-	32.227	10,3
2012	5.133	298.403	2.814	-	33.028	11,1
2013	5.168	294.174	2.359	-	26.104	8,9

Sub. rate ~15%

Note: the rate of vaccinated animals is calculated on the total number of animals in the area, while it should be calculated only in flocks vaccinated to assess the rate of eligible animals that have been effectively vaccinated.

DAY 2

14. Organization of the Veterinary Services of the Algarve Region - Food and Veterinary Department of the Algarve Region – DSAVRALG.

15. Sheep and goat brucellosis vaccination programme in Algarve region – DSAVRALG.

Dr. Cristina Ferradeira, General director, Veterinary Services of the Algarve Region - (DSAVRALG).

The DSAV of Algarve (DSAV-Alg) is situated in Faro, the capital of Algarve, in the south of Portugal. Nine civil servants are working in DSAV-Alg, from which two are supervisors, five are technicians and two are operational assistants.
The region of Algarve consists of 16 municipalities with an area of 4,996 Km^2. The population is around 451,006 people. The animal population is 8,084 cattle in 314 holdings, 57,226 sheep and goats in 1,237 holdings and 16,606 pigs. The farmers of Algarve are aged people (50 years old on average), with a low level of school education. More than 90% do not own land and use communal land or agriculture land after harvesting. These areas are shared among several flocks. There are also ancient practices of exchange of animals between flocks.
Regarding BB, Algarve is officially free since 2012 (Commission Implementing Decision 2012/204). The surveillance of the programme includes blood sampling from all cattle over 24 months old.
Regarding S&GB, an eradication programme is in force on animals over 6 months old, including the vaccination of young females (3-6 months old).
Both programmes are mainly implemented (99%) by the three OPPs of the region and supervised by the DSAV-Alg. The three OPPs are: Castro Marin (in the east-south), Alcoutin (in the east-north) and ASCAL (in the centre and west of Algarve region). The three OPPs employ 18 collaborators (nine veterinarians and nine technicians).
The DSAV's personnel for brucellosis are one veterinarian and three technicians. The time allocated for the programmes is about 75% of the whole working time for the veterinarians and 70% for the technicians.
As far as the small ruminant population is concerned, the brucellosis eradication programme has been implemented since the year 2000 along the following lines, which were reinforced in 2005:

- To decrease the time between the blood collection and the slaughter of positive animals;
- To implement the CFT (since 2000);
- To reduce the time of compensation payments;
- To improve animal identification taking into account Reg. 21/2004;
- To perform total slaughtering of herds chronically infected, and in which the health status did not improve over the years;
- To supervise constantly the three OPPs;
- To carry out epidemiological studies on all new outbreaks (animal positive to RBT and CFT), and to impose appropriate sanctions on infractions, under Decree-Law no. 244/2000, of September 27;
- To participate on the vaccination programme with Rev.1, together with the OPPs;
- To carry out field visits for verification of the correct application of the health programmes implementing rules on behalf of the regional OPPs and the elaboration of

the respective reports according to a Manual of Visits to the OPPs and with Reg. (EC) 882/2004;

- To contribute to the movement control, namely in holdings under sanitary restriction;
- To carry out health education actions with the breeders.

Due to the lack of improvement on brucellosis prevalence, conjunctival vaccination with Rev.1 became mandatory in 2005 for all young females aged between 3 and 6 months of age in seven counties of Algarve. This vaccination was carried out by OPPs with the help of the official Veterinary Services. The number of vaccinated animals has decreased in recent years. At present, the total slaughter of flocks is not applied as intensively as in the past and the main activities are:

- Conjunctival vaccination of young animals (3 to 6 months) with Rev.1;
- Serological control – control and re-inspection;
- Bacteriological exams;
- Sanitary classification of farms / epidemiological units;
- Sanitary restriction of holdings;
- Notification of abortions;
- Control of animal movements;
- Epidemiological survey (positive and isolation);
- Maintaining premises depopulated;
- Disinfection of holdings;
- Sanctions on infractions;
- Voluntary slaughter;
- Notification to the health delegate (human brucellosis).

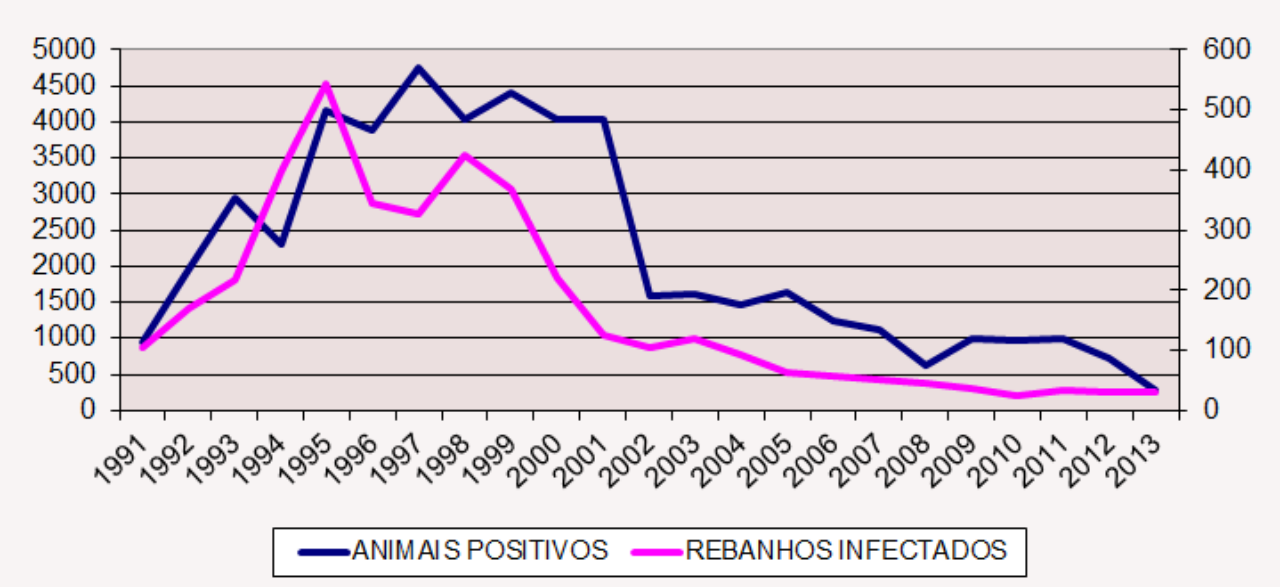
In the last five years the brucellosis incidence has increased. The main aspects related with the introduction of disease are: the use of common pasturelands and drinking areas; the illegal introduction of animals from flocks not free from the disease; the exchange of animals between flocks; the unauthorized and irregular trade.

In the 2013 programme, there were a total of 200 farms, 136 of which were vaccinated (68%). The number of animals under the vaccination programme were 2,525; however, only 56.4% were vaccinated (n=1,424).

A global prevalence of 5.05% was recorded (39 positive holdings), with an incidence of 2.48%. There are differences between the OPP: Castro Marin – 3.38% prevalence, Alcoutim – 2.94% and ASCAL – 8.53%.

The evolution of positive animals and holdings is shown in **Figure 30**

Figure 30. Evolution of positive animals (blue line) and flocks (pink line) in Algarve.



In 2013, only 17% of new positive flocks had *B. melitensis* isolation. There were 47 (from 41 holdings) animals submitted to sampling and only 7 were positive (from 7 holdings).
As final considerations, the following aspects were referred for the future improvement of the programme:

- Scrupulously respect the deadlines established for inspections and re-inspection of herds;
- Exhaustive control of all existing herds in the area of action;
- Maintenance of the sanitary pressure on infected herds and problem herds;
- Strict implementation of the registration system of animal identification in PISA.Net;
- Continue with the depopulation of herds with chronic brucellosis;
- Continue the actions of publicizing and training of farmers;
- Consider the application of vaccination in some herds in order to reduce the incidence;
- Encourage the installation of approved assembly centres (trade centres) in the Algarve;
- Improve human and material resources in the implementation of the Plan;
- Speed up the sanctions applications on infraction processes;
- Remove the possibility of application for premium for production or other benefits for infected herds, so as to make the producer aware of the advantages of having his flock free from disease.

16. Brucellosis in humans: statistics, diagnostic and control – Health General Directorate (DGS)

Dr. Isabel Castelão, Health General Directorate (DGS).

Human brucellosis is still one of the most common zoonoses worldwide, with great variations of incidence at Regional level and even within countries. Countries that have managed to eradicate the disease in human and animal populations can still have imported cases. In Europe, there is a general decrease in the number of human cases, mainly due to socioeconomic factors, animal-based control programmes and improved surveillance systems (Pappas *et a*l. 2006; EFSA, 2011). Clinical suspicion and diagnosis of human brucellosis are difficult, due to the fact that a number of symptoms are similar to

other diseases. Health care workers must use adequate protection when treating brucellosis patients, particularly when performing invasive procedures, and laboratory personnel must handle specimens as a biohazard, and biological specimens should be handled under biosafety level 3 conditions. The goal of treatment is to control symptoms as quickly as possible in order to prevent complications and relapses.

Criteria for the definition of human brucellosis cases are the following (SINAVE, April 2014):

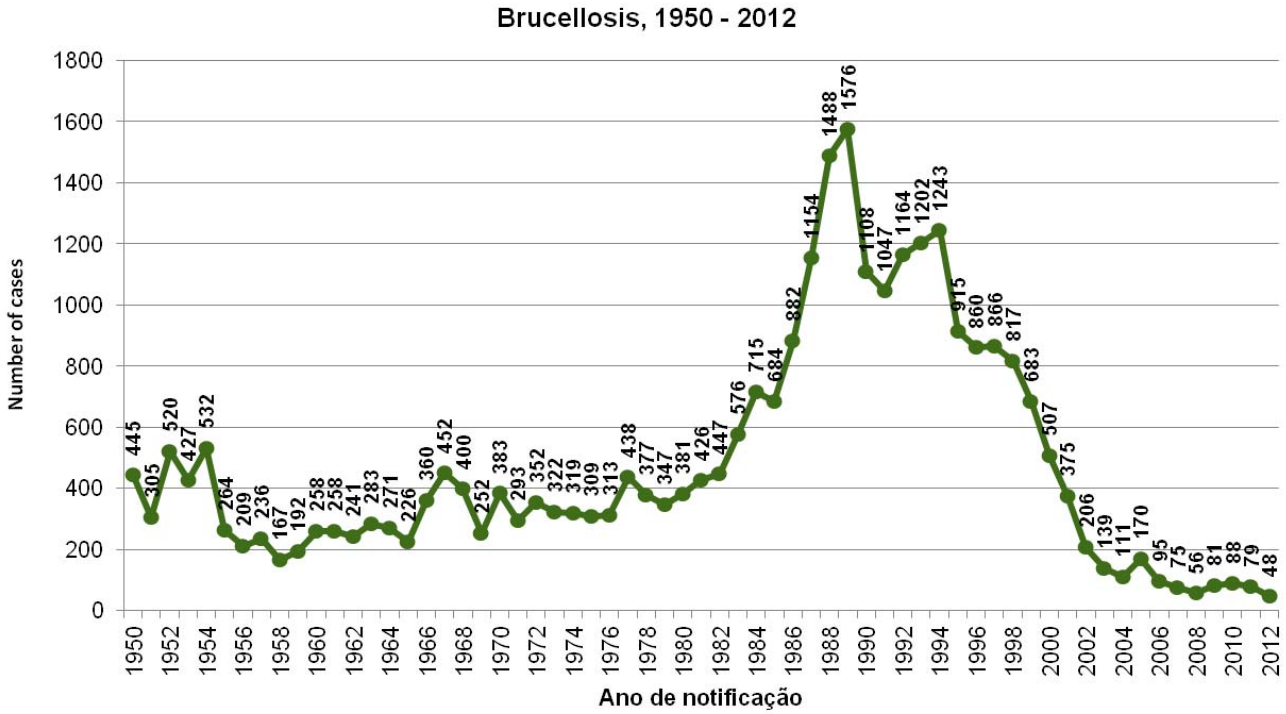
- ***Clinical criteria***: person with fever and one or more of the following: sweats (mainly nocturnal), chills, arthralgia, fatigue, depression, headaches, anorexia;
- ***Laboratory criteria***: one or more of the following: bacteria identification from clinical specimens or specific antibody response for *Brucella* spp;
- ***Epidemiological criteria***: contact with contaminated foods or water; contact with contaminated animal products (milk and milk products); contact with infected animals or people; contact with the same source as infected people

The human brucellosis case definition (SINAVE, April 2014) is the following:

- ***Probable case***: person presenting with symptoms and epidemiological link;
- ***Confirmed case***: person presenting clinical and laboratory criteria.

The evolution of human brucellosis notifications in Portugal is shown in **Figure 31**

Figure 31. Portugal, evolution of human brucellosis notifications, 1950-2012.



After a peak in year 1988, the number of cases decreased. The regions more affected are the North and the Centre of the Country. Men are more affected than women and the age group with higher number of cases is the 25-65 years old. The higher number of cases is recorded between the months of April and August. According to the speaker, in conclusion, the eradication of brucellosis is based on 3 key areas: a) human health, b) animal health and c) food monitoring. The success already achieved can only be consolidated and improved by ensuring the timely reporting of cases, diagnosis and treatment, as well as the inter-sectorial collaboration between these three areas.

17. Laboratory diagnosis for brucellosis – private laboratory of the Union of Farmers Organizations of the Centro Region.

Dr. Carlos Seixas, Union of Farmers Organization of the Centro Region.

The private laboratory of the Union of Farmers Organizations of the Centro Region (UADS do Centro) is in charge of the first line sero-screening on blood or bulk milk samples. It is included in the Portuguese network of Animal Health laboratories, which includes both public (regional of local) and private labs. The network is supervised by the NRL (Instituto Nacional Investigação Alimentare Veterinária – INIAV) which is accredited according to ISO 17025.

The screening programme is defined by the CA according to the herd sanitary status. The tests performed are RBT and CFT on blood and indirect ELISA (Milk-iELISA) on milk. RBT is performed on all blood samples whatever the herd status. CFT (results given as a titre in ICFTU/ml according to annex C of 64/432 EC directive) is performed:

- on all samples with RBT positive results;
- in B3S, B4S, B2 and B2.1 bovine or ovine-caprine flocks, as well as;
- B3/B4 ovine-caprine flocks when at least 5% animals of the flock are RBT positive or if at least one animal is positive to both RBT and CFT.

CFT is also performed as a pre-movement test. Milk-iELISA is performed in dairy herds according to CA requirements in B3/B4 herds. Any positive reaction is followed by RBT on all adults of the concerned herd.

Sample collection is performed by ADS/OPPs, which also register data in PISA.Net, while labs enter the test results of the corresponding animals. Regional Veterinary Services analyse and validate the data, consequently updating the sanitary status of the herds and proceeding with sanitary measures where required.

The speaker presented on behalf a laboratory belonging to the Union of Breeder Associations of Central Region, as an example of private veterinary laboratories authorized to carry out the serological testing. Such kinds of laboratories, together with the public laboratories, integrate the Animal Health Laboratory Network in Portugal.

Apart from this official task, the laboratory performs other diagnostic tests giving support to the veterinary practitioners working for the Breeder Association.

The laboratory is accredited according ISO 17025 and performs routinely blood (RBT and CFT) and milk tests (i-ELISA), following the guidance and under the supervision of the National Reference Laboratory for Brucellosis.

The NRL supplies the laboratory with Standard Operating Procedures and reference material (sera). The laboratory participates annually in a Proficiency Test Round organized by a private company located in UK (VETQAS).

Tasks and responsibilities of different actors involved in the sero-surveillance can be summarized as follows:

Field Veterinarians working for the Breeder Association (OPPs):

- Sample collection on the holdings (blood, milk)
- Insertion of the data related to Identification and Registration on PISA.Net
- Transport and delivery of samples to the laboratory

Field Laboratory:

- Sample preparation

- Testing
- Introduction of the test results on PISA.Net

Regional Food and Veterinary Service:

- Assessment and validation of test results
- Update of sanitary status of the herds
- Isolation of infected flocks, sanitary slaughtering

18. Laboratory diagnosis for brucellosis – National Reference Laboratory – INIAV.

Dr. Maria Inácia Corrêa de Sá and Dr. Isabel Travassos Dias, National Reference Laboratory (INIAV).

The network of public laboratories has recently been reduced as shown in **Figure 32**.
The NRL gives technical support to regional laboratories. It participates to annual workshops and inter-laboratory proficiency tests (ILPT) organised by the EURL. The NRL also participates to the proficiency tests organised by VETQAS (a UK private structure organising proficiency tests on demand for several animal diseases).
The NRL is in charge of bacteriological diagnosis on all kinds of samples (tissues from slaughtered animals as well as milk and vaginal swabs).
The strains isolated from cattle and typed by INIAV from 2005 to 2013 are shown in **Figure 33**.

Figure 32. Network of public veterinary laboratories in Portugal-mainland; recent evolution.

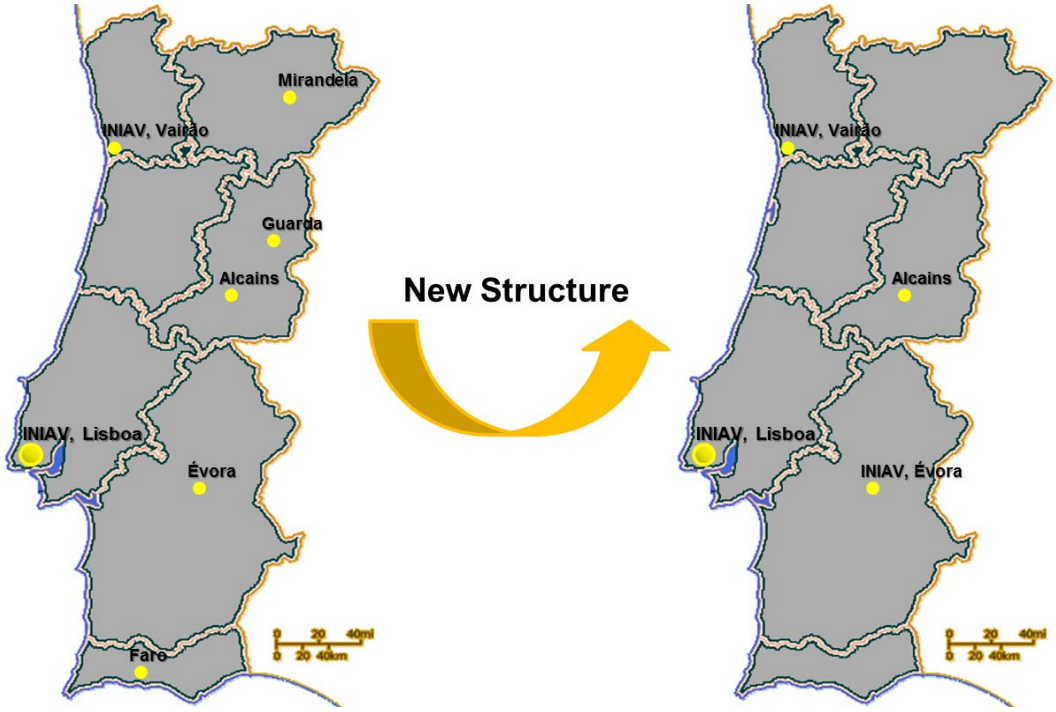
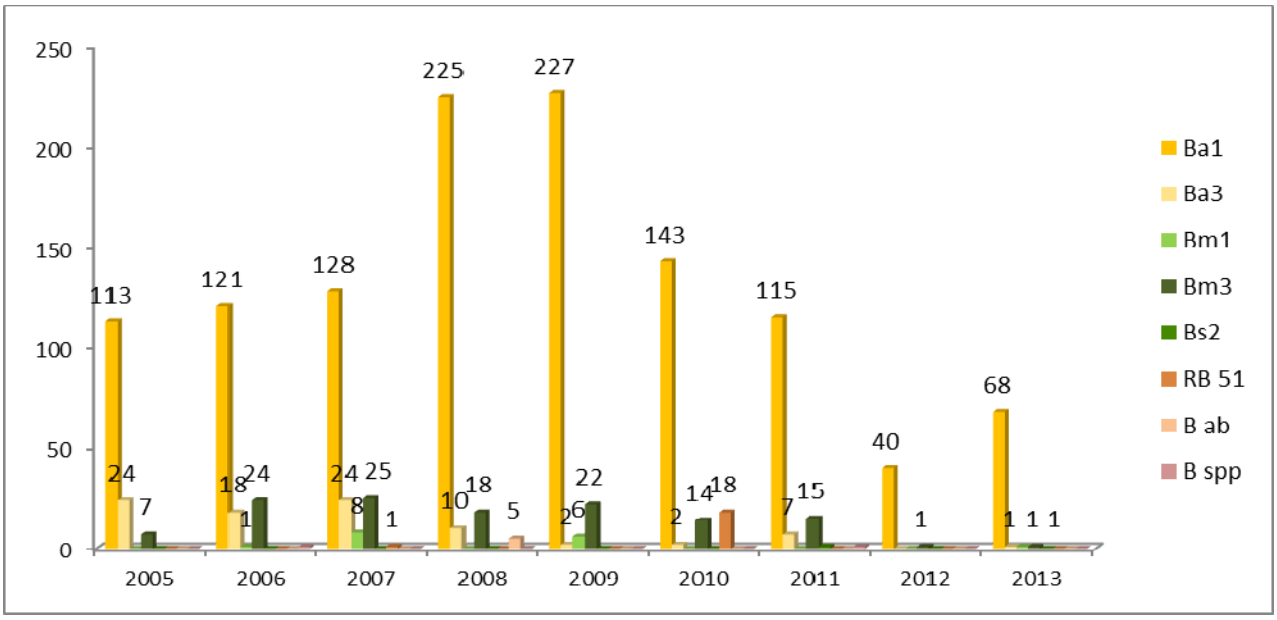


Figure 33. *Brucella* strains identified in cattle by the Portuguese NRL (2005-2013).



The most frequent strain isolated in cattle is *B. abortus* biovar 1, the second being *B. melitensis* biovar 3 the latter related to the sheep and goat reservoir (as shown in **Figure 34** and **Figure 35**). The RB51 vaccine strain has been also isolated on several occasions.

Figure 34. *Brucella* strains identified in sheep by the Portuguese NRL (2005-2013).

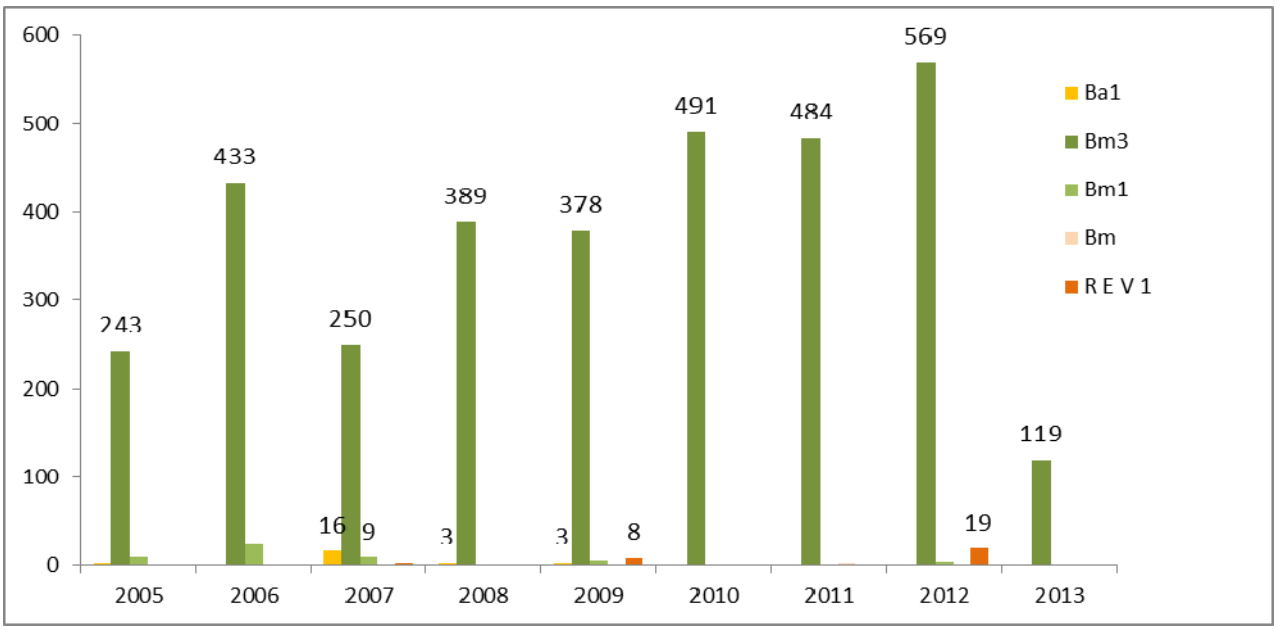
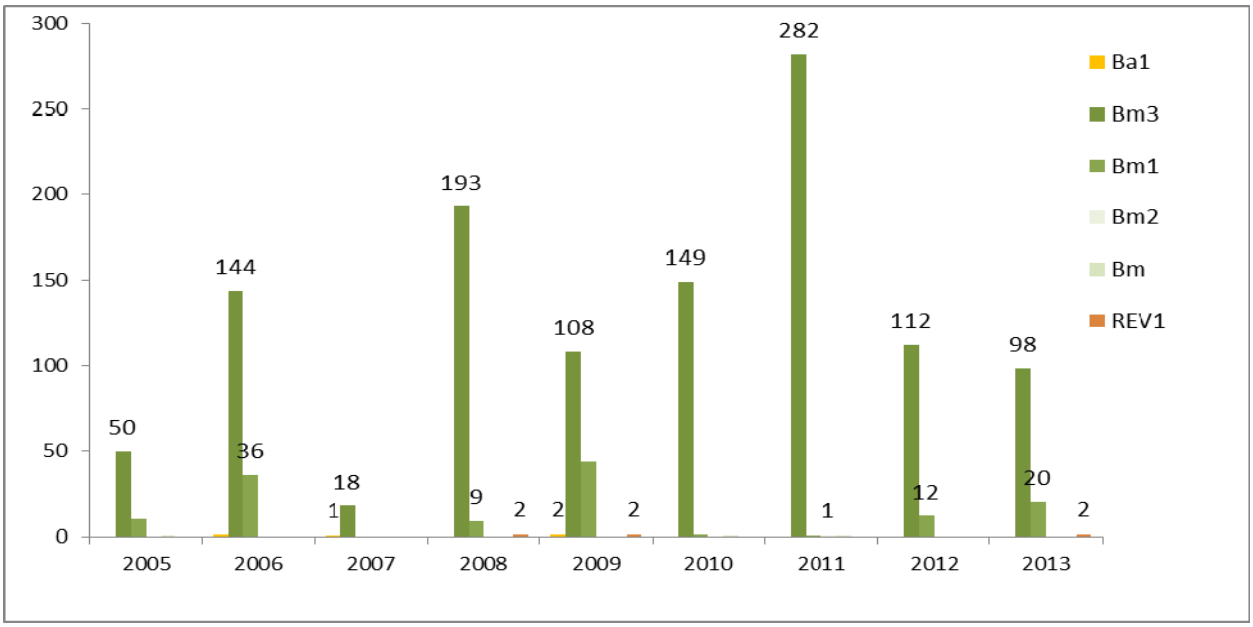


Figure 35. *Brucella* strains identified in goats by the Portuguese NRL (2005-2013).



The NRL also performs molecular tests on samples for *Brucella* detection (PCR) as well as molecular identification and typing of *Brucella* strains identified in Portugal (Bruce-ladder, PCR-RFLP and MLVA).
The NRL has also developed research projects in molecular biology, as for example:

- Multicentre EU Validation of Bruce-Ladder for *Brucella* species identification;
- MLVA typing of Portuguese human and animal *B. melitensis* and *B. abortus* strains;
- MLVA typing of *B. abortus* strains isolated in Azores in comparison with those isolated in Portugal mainland;
- MLVA typing of *B. melitensis* strains isolated in Portugal mainland.

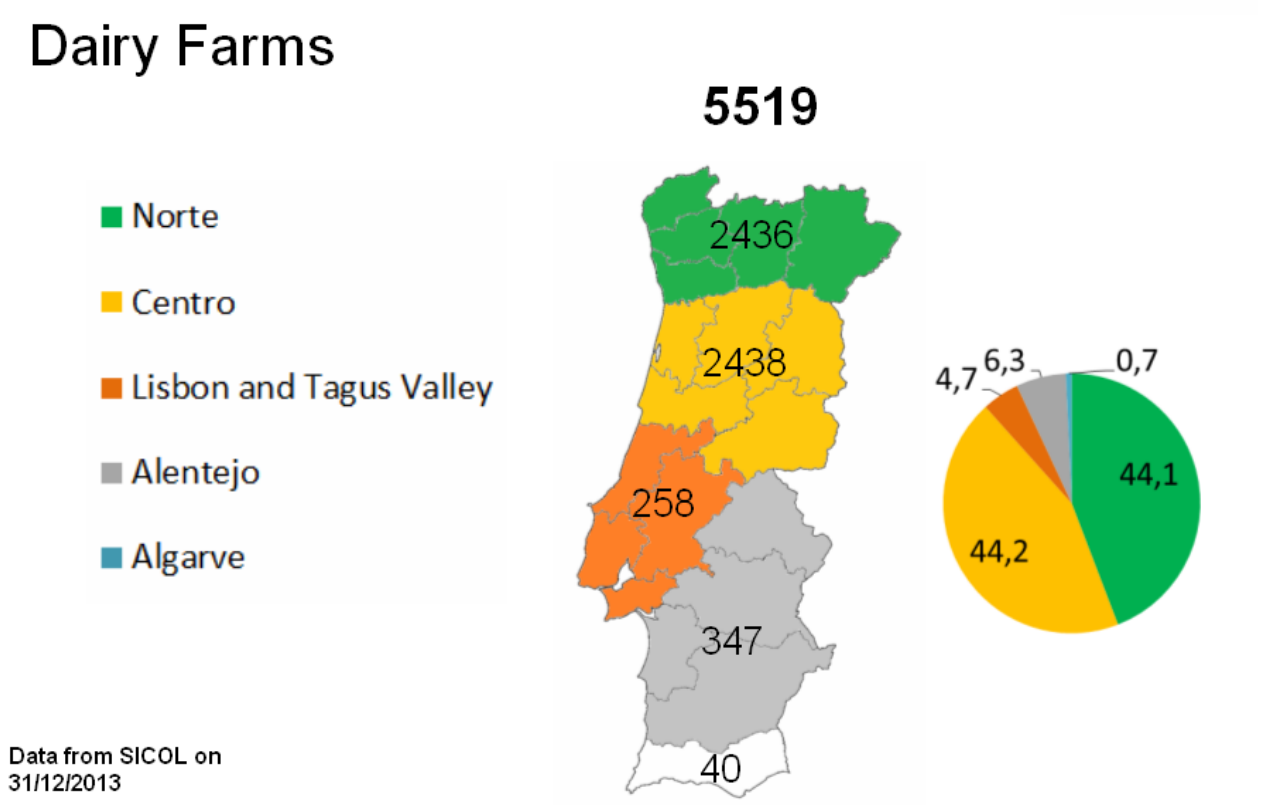
In the frame of the national brucellosis eradication programme, the NRL also performs the milk-iELISA as well as blood tests for the control of breeding animals (mainly pigs) and animals for export (dogs and wild animals). It produces the national secondary positive standard bovine serum as well as internal positive controls for RBT, CFT and iELISA and controls the antigen and ELISA kit batches used at national level. It maintains the national collection of *Brucella* strains and serum samples.

19. Milk Control Programme - Food Safety Department (DSSA)

Dr. Aurora Sousa, Food Safety Department (DSSA).

In Portugal, at the end of 2013, a total of 5,519 dairy farms are present. Most of them are located in the North and Central Regions (**Figure 36**). A National Control Plan is carried out on milk and milk products, elaborated by the Food Safety Department (DSSA). This control plan is part of the National Food Surveillance Plan.

Figure 36. Portugal, number of dairy farms.

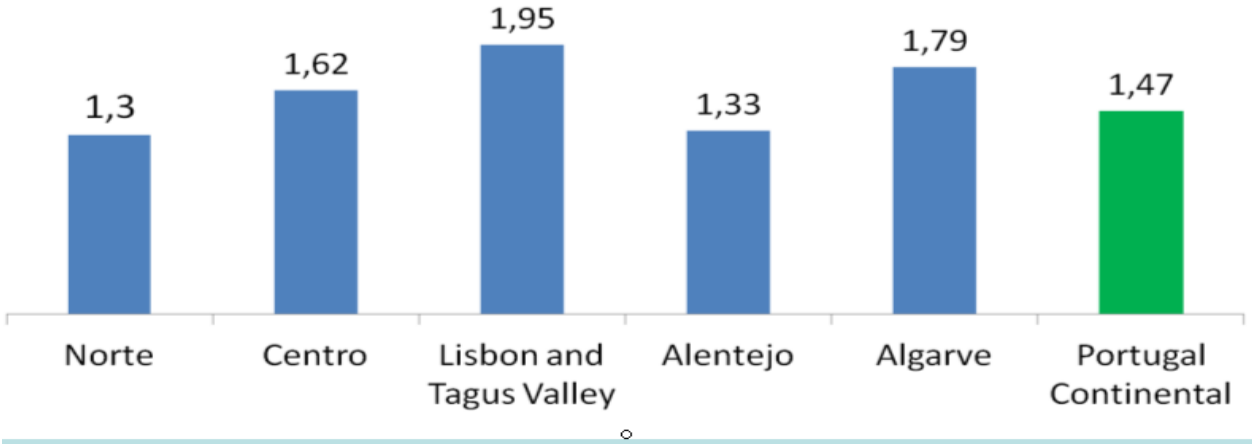


The National Control Plan consists in analysing raw milk and milk products and focuses on the compliance of:

- Annex IV of Regulation 854/2004
- Requirements of Section IX, Annex III Reg. 853/2004 and Reg. 852/2004

A team of inspectors (veterinarians and technicians) perform controls at farm level and carry out audits on them. Also hygiene, milk storage system as well transport of raw milk is controlled at farm level. The visit is documented by compiling a check list. Farms are divided in four risk categories. Based on the risk level, farm visits are timed once every 24 months (category 1), each 12 months (category 2) or twice a year (category 3 and 4).
In year 2013, a total of 2,888 controls were carried out, with a non-conformity rate of 1.47% of holdings visited (**Figure 37**).

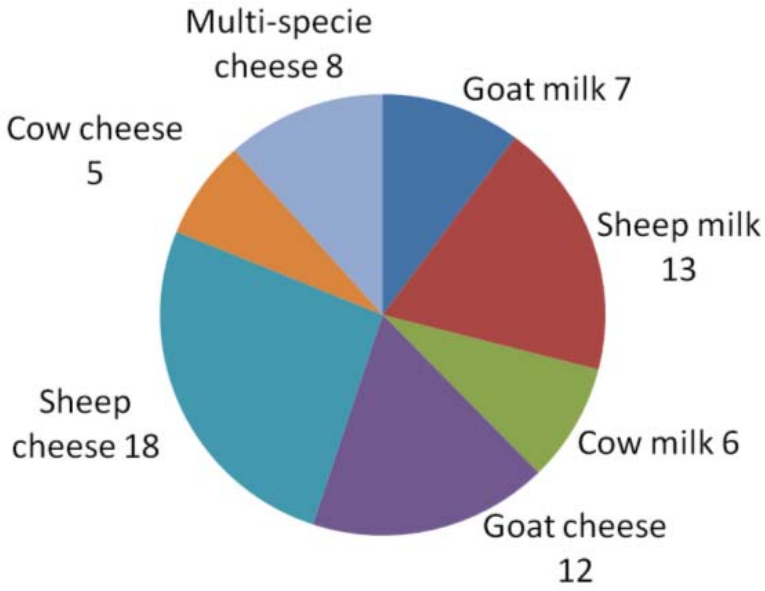
Figure 37. 2013 - Number of controls and average compliance.



Number of controls					
1471	1087	171	130	29	2888

During the farm visits, water hygiene standards are also controlled. Results of the controls are submitted to the Official Veterinary Services. In year 2013, a total of 43 milk and milk products were sampled for *Brucella*. In all 26 collected raw milk samples (seven goat milk, 13 sheep milk, and six cow milk), no *Brucella* was found (**Figure 38**).

Figure 38. Milk products tested for *Brucella* in 2013 and results



In addition, 43 samples of fresh or cottage cheese (goats, sheep, cow and mixed) were tested in 2013, all with negative results for *Brucella*.

CONCLUSIONS

1. The eradication programmes for Bovine (BB) and Sheep and Goat (S&GB) brucellosis have been well designed by the country. There has been a continuous but slow reduction of BB and S&GB prevalence at national level and the Task Force acknowledges the progresses made towards eradication. However, there is an increasing trend for some incidence rates. The programmes implemented in specific high risk areas, including compulsory vaccination, proved effective in reducing prevalence. However, in certain areas no significant progress has been made in recent years.
2. Areas where the programme is implemented are well-defined (whole-national mainland territory). Epidemiological peculiarities are taken into account for a tailored design of the measures (*e.g.* adoption of vaccination policy in some specific epidemiological units). However, even if the data provided were not complete, there is sufficient information to conclude that vaccination coverage is still insufficient in some regions (in terms of implementations and areas of application).
3. Movement of animals and direct contact with infected herds/flocks have been recognized as main risk factors for the spread of both BB and S&GB. Epidemiological investigations are not performed in all cases.
4. With the reduction of prevalence, the rate of False Positive Serological Reactions (FPSR) is expected to increase. However, currently, cases are not always evaluated in details and protocols for managing FPSR suspected cases (including the use of brucellin skin test) are not implemented at national level.
5. Measures taken in case of positive test results are appropriate. Positive animals in non-infected herds/flocks are investigated in bacteriology.
6. A strategy for depopulation of infected herds/flocks is foreseen in the programme. However, clear rules should be formalized at national level, especially when the occurrence of outbreak in free and non-vaccinated areas is concerned, and when there is no expectation of improvement in a short time.
7. Animal identification and herds/flocks registration means are generally in line with current EU legislation. However, the temporary identification of young S&G is not in line with Regulation 21/2004.
8. The supervision of NRL on the network of laboratories has clearly improved. However, it is still insufficient due to the absence of proficiency ring trials (with appropriate follow-up) organized by the NRL at national level.
9. The procedures on the use of RBT and CFT in parallel in infected herds/flocks are appropriate.
10. There is no evidence that the central level has established clear procedures for the supervision of actions implemented in the context of the programme by veterinary services and OPPs.

RECOMMENDATIONS

1. Efforts should be made by the competent authority to reinforce the existing level of commitment in brucellosis eradication programme and in improving specific aspects on the control of the disease. Data produced in the context of the eradication plan should be more deeply analysed both at central and local levels, to identify the weak points and to adjust the measures accordingly. Special measures to reduce incidence should be implemented, like vaccination of all flocks in risk areas and reinforcement of animal movement control (trade and sharing of same environment).
2. Vaccination coverage should be improved. For S&G, the option of enlarging vaccination areas may be also considered when outbreaks occur out of the vaccination zone. Clear requirements to be fulfilled should be defined to take the decision to stop vaccination in particular areas. The choice of non-vaccinating certain flocks in vaccination areas should be justified based on clear epidemiological criteria. In general, good-practices of vaccination (all genders for S&G, age limits, isolation of vaccinated animals, etc. should be established and applied by OPP). In relation to the Algarve programme it is recommended that young S&G males should be included in the vaccination programme.
3. Reinforcement of movement controls and trace-back and trace-forward of outbreaks may contribute to reduce brucellosis incidence rate. The results of epidemiological investigation should be used to identify not only risk factors but also probable sources and contacts at risk. All herds/flocks identified at risk by the investigations should be checked. The results of epidemiological investigations should be analysed as soon as possible in order to rapidly implement appropriate measures to prevent the spread of the disease.
4. Guidelines on management of FPSR should be finalised, harmonized at national level and implemented in the areas with low prevalence in order to help the management of these cases.
5. Further efforts and adequate means should be kept to maintain a good level of bacteriological investigation in suspect cases.
6. Guidelines for stamping out of infected herds/flocks should be formalised and harmonized at national level. In particular, the group recommends the compulsory application of total depopulation in outbreaks occurring in free areas.
7. Traceability and animal identification should be fully in line with EU regulation in order also to improve the outcome of control measures.
8. The NRL should be more actively involved in the supervision of the work carried out by laboratories in the context of the eradication plan. Laboratories of the network should be all accredited according to ISO 17025.
9. The current procedures for the use of RBT and CFT in parallel in infected herds/flocks should be maintained and reinforced, especially in case of sheep and goats brucellosis infected flocks.
10. The group recommends the enforcement of an audit system for the veterinary services in charge of the implementation of the eradication programme and the OPPs. Constraints identified at regional level should be adequately resolved (e.g. the difficulties of transport of positive animals to the abattoir in Algarve, the timely supply of Rev.1 vaccine).

The Working Document SANCO/6095/2009 should be taken into due consideration when designing, planning and implementing the measures foreseen by the programme. The document can be found at the following web address:

http://ec.europa.eu/food/animal/diseases/eradication/eradication_bovine_sheep_goats_brucellosis_en.pdf.

A warm thank you is extended to the Portuguese hosts for their great hospitality and willingness to share information about the details of the programme. The effort of arranging this meeting is greatly appreciated.

Annex I

MEETING OF THE BRUCELLOSIS SUB-GROUP OF

THE TASK FORCE FOR MONITORING DISEASE ERADICATION

HELD IN VILA REAL, PORTUGAL, 15-16 MAY 2014

PARTICIPANTS

Task Force Brucellosis Sub-Group - members

- Fabrizio DE MASSIS, Chairman, Italy
- Manuel DURAN-FERRER Spain
- Bruno GARIN-BASTUJI France
- Aristomenis KATSIOLIS Greece
- Ernst STIFTER Italy
- Yolanda VAZ Portugal

European Commission (DG SANCO- Unit G5)

- Cristophe BERTRAND Head of Unit
- Valentina PIAZZA Head of Sector: Veterinary

Country Representatives (main list)

Name	Position
Miguel Lemos Fernandes	Director, Veterinary Services - Animal Protection Department (DSPA)
José Neves	Veterinary Services - Animal Protection Department (DSPA)
Inês Cardoso	Veterinary Services - Animal Protection Department (DSPA)
Hernani Martins	Veterinary Services - Autonomous Region of Azores (DSV/RA)
Alfredo Sobral	Head, Veterinary Services of the Norte Region - (DSAVRN)
Ana Paula Figueras	Veterinary Services of the Norte Region - (DSAVRN)
Maria Do Carmo Caetano	Veterinary Services of the Alentejo Region - (DSAVRALT)
Ana Rita Simões	Union of the Farmers Organization of Alentejo
Cristina Ferradeira	Head, Veterinary Services of the Algarve Region - (DSAVRALG)

Isabel Castelão	Health General Directorate (DGS)
Carlos Seixas	Union of Farmers Organization of the Centro Region
Maria Inácia Corrêa de Sá	National Reference Laboratory (INIAV)
Isabel Travassos Dias	National Reference Laboratory (INIAV)
Aurora Sousa	Food Safety Department (DSSA)

Annex II

MEETING OF THE BOVINE, SHEEP AND GOATS BRUCELLOSIS SUB-GROUP OF THE TASK FORCE FOR MONITORING DISEASE ERADICATION HELD IN VILA REAL, PORTUGAL, 15-16 MAY 2014

AGENDA

#	*Timing*	*Item*	*Presenters/ Rapporteur*
	DAY ONE	**Vila Real**	
	09:00	Welcome and introduction – Food and Veterinary General Directorate – DGAV - and University of Trás-os-Montes e Alto Douro – UTAD.	
	09:20	Presentation of the subgroup on brucellosis Task-Force and introduction – European Commission.	
1	09:35	Structure and organization of the Veterinary Services - Animal Protection Department – DSPA.	Dr. Miguel Lemos Fernandes
2	09:50	National Animal Identification and Registration System (SNIRA) – DSPA.	Dr. José Neves
3	10.05	Animal Health Information System (PISA.Net) – DSPA.	Dr. Inês Cardoso
	10.35	End of Session I – Discussion.	All Speakers
		Coffee Break	
4	11:05	Bovine population characterization – DSPA.	Dr. José Neves
5	11:20	Bovine brucellosis eradication programme in the Mainland /evolution – DSPA.	Dr. Miguel Lemos Fernandes
6	12:00	Bovine population characterization and bovine brucellosis eradication programme in the Autonomous Region of Azores – DSV/RA.	Dr. Hernani Martins
7	12:30	Organization of the Veterinary Services of the North Region - Food and Veterinary Department of the North Region – DSAVRN.	Dr.Alfredo Sobral
8	13:00	Bovine brucellosis vaccination programme in the North region – Food and Veterinary Department of the North Region – DSAVRN.	Dr. Ana Paula Figueras
	13:30	*Lunch*	
9	14:30	Bovine brucellosis vaccination programme in Alentejo region – Food and Veterinary Department of the Alentejo Region – DSAVRALT.	Dr. Maria Do Carmo Caetano
10	15:20	Field implementation of the bovine brucellosis eradication programme – Union of the Farmers Organization of Alentejo.	Dr. Ana Rita Simões
11	16:00	Sheep and goat population characterization – DSPA.	Dr. José Neves
12	16:05	Sheep and goat brucellosis eradication programme in the Mainland /evolution – DSPA.	Dr. Miguel Lemos Fernandes
		Coffee Break	

13	17:00	Sheep and goat brucellosis vaccination programme in Trás-os-Montes / Northern region – DSAVRN.	Dr. Ana Paula Figueras
	18:00	*Closure of the first day of meeting*	
	DAY TWO	**Vila Real**	
14	09:00	Organization of the Veterinary Services of the Algarve Region - Food and Veterinary Department of the Algarve Region – DSAVRALG.	Dr. Cristina Ferradeira
15	09:20	Sheep and goat brucellosis vaccination programme in Algarve region – DSAVRALG.	Dr. Cristina Ferradeira
	10:40	Coffee Break	
x	11:00	Data on vaccination carried out in DSAVR Centro and Alentejo.	Dr. Miguel Lemos Fernandes
16	11:10	Brucellosis in humans: statistics, diagnostic and control – Health General Directorate – DGS.	Dr. Isabela Castelão
17	11:40	Laboratory diagnosis for brucellosis – private laboratory of the Union of Farmers Organization of the Centro Region.	Dr. Carlos Seixas
18	11:55	Laboratory diagnosis for brucellosis – National Reference Laboratory – INIAV.	Dr. Maria Inácia Corrêa de Sá Dr. Isabel Travassos Dias
	12:20	Milk Control Programme - Food Safety Department – DSSA.	Dr. Aurora Sousa
	13:00	*Lunch*	
	14:30	EU Task Force Brucellosis subgroup meeting.	TF BRC Subgroup
	16:00	Presentations of final conclusions and recommendations by the Group - Final opportunity for questions and discussions.	All Speakers
	17:00	*Closure of the meeting*	