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REPORT OF THE

"Brucellosis"
TASK FORCE SUB-GROUP

Meeting held in

Halkidiki

Greece

14-15 June 2012

REPORT OF THE

MEETING OF THE BRUCELLOSIS SUB-GROUP OF THE

TASK FORCE FOR MONITORING DISEASE ERADICATION

HELD IN HALKIDIKI, GREECE, 14-15 JUNE 2012

SHEEP AND GOATS BRUCELLOSIS

PARTICIPANTS: see Annex I

AGENDA: see Annex II

LOCATION: Halkidiki, Greece

DAY 1

1. Organisation and structure of the Central and Regional Veterinary Authorities.

Spiridon Doudounakis, Director, Directorate of Animal Health, General Veterinary Directorate, Ministry of Rural Development and Food.

Two Ministries are involved in the Brucellosis programme in Greece: the Ministry of Rural Development and Food and the Ministry of Interiors. The Directorate of Animal Health is one of the four directorates of the General Directorate of Veterinary Services of Greece (Figure 1), and is under the Ministry of Rural Development and Food.

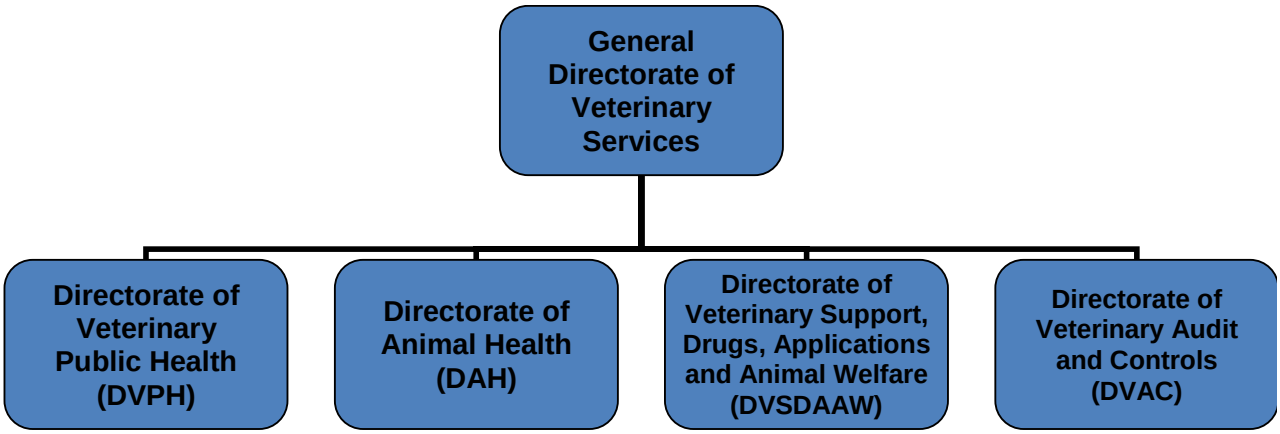

Figure 1. Organisation of Veterinary Services in Greece, year 2012.

The Animal Health Directorate is responsible for the design of the programme, the submission of reports and funding requests to the Commission, the follow up of the Legislation and the tenders for the programme's supplies.

National administrative subdivisions have been reorganised in 2011. In particular, former "Prefectures" have been changed to newly established "Peripheries". Nowadays, Greece is divided in 13 Regions ("Peripheries"). In each Region, there is a Directorate General of Regional Rural Economy and Veterinary Medicine with a specific Directorate of Veterinary Medicine. Each Region is furtherly subdivided in Regional units (from 3 to 13 according to the Region), each with a specific local Veterinary Authority. They are responsible for the implementation of the Brucellosis programme.

Serological diagnosis of brucellosis is performed in 8 Regional Veterinary Laboratories (RVL) spread throughout the country. The Regional Veterinary Laboratory of Larissa serves as the National Reference Laboratory (NRL). There are 17 RVLs, but only 8 perform serological diagnosis of brucellosis.

Involved are also the 10 Border Inspection Posts in the country (Decision 2009/821/EC, as amended).

2. Structure and distribution of ovine and caprine livestock in Greece

Dr Myrsini Tzani, Head of the Department of Zoonosis, Directorate of Animal Health, General Veterinary Directorate, Ministry of Rural Development and Food.

Ovine and caprine livestock are traditionally the most dynamic sector in Greece, contributing 18% of the total rural income, representing 58.7% of the animal production, 45% of the total gross value of livestock production, and about 15% of the total value of all agricultural production. The total number of sheep and goats is 16,417,157 heads in 139,207 flocks. This population includes 11,416,009 sheep and 5,001,148 goats in 64,549 mixed flocks, 18,941 goat flocks and 55,717 sheep flocks (78% of the flocks are combined grazed and stabled flocks; 11% are only grazing; and 11% permanently stabled). Of the about 98 million sheep and 12 million goats raised in the EU, 10.5% of the sheep and 47.7% of the goats are raised in Greece. Sheep represents 70% of the total animal population in Greece, the majority of which is farmed in the mainland.

The population consists of twenty different breeds, mainly milking and meat production breeds and their crosses, with a great variability of morphological, physiological and productive characteristics. These breeds are adapted to the particular geographical and

climatic conditions of the country and give the opportunity to exploit marginal upland areas that would otherwise not be exploited.

The Greek sheep and goat population consists of genetically diverse flocks, which derive from animals of different breeds and in many cases from animals of unknown genotypic identity showing a great variability in terms of morphological, physiological and productive characteristics. Of the total of 26 original Greek breeds, six have disappeared.

The system of husbandry is mainly semi-extensive with 78% of sheep and 91% of goats bred in mountainous and marginal areas of the country, where it is the main productive sector, and where an alternative employment is difficult, if not impossible. About 110,000 farms with more than 10 adult animals are involved in this sector.

A large proportion (85%) of flocks practices transhumance. This is characterized by an annual animal movement to and from the summer-mountain pastures covering long distances by the flocks during the day. Pastures cover 40% of the country's total area and are mainly located in mountainous and marginal areas. The majority of pastures (57%) are commonly shared among flocks. Most of the holdings consist of traditional small family farms with an high degree of diversity in size, type of housing, production etc. However, in recent years, there has been a significant reduction of domestic and nomadic farming and a tendency to concentrate animals in large and organized units.

While in the rest of the EU (mainly Italy, Portugal, Spain and France) sheep and goats are mainly bred for their meat or wool, in Greece 95% of animals are milked. Milk production is either for private consumption or is sold to and transformed by local private dairies and cooperative industry. 630,000 tons of sheep and 420,000 tons of goat milk are produced annually. 90% of sheep milk and 80% of goat milk is destined to cheese production (75% soft cheeses, mainly Feta cheese). The majority (87%) of flocks are mixed production milk and meat and where more than 95% of the sheep and goats are milked. The production of sheep and goat milk (1,050,000 tons) corresponds to 30% of total EU sheep and goat milk production. The total domestic production of goat and sheep meat represents 11-12% of the total EU production. The country is 86% self-sufficient for ovine and caprine meat and 100% for ovine and caprine milk.

The majority of sheep and goat milk is used for the production of cheese and traditional dairy products many of which are of Protected Designation of Origin (PDO). It is estimated that in EU market, about 1 billion € per year is spent for the consumption of Feta cheese, while exports from Greece amounted to about 130 million €.

3. **The national control and eradication programme for *B. melitensis* in sheep and goats. Progress achieved in implementing the vaccination programme (Mainland and island of Evia, Thasos, Lesvos and Leros) and the test and slaughter programme (Islands).**

   Dr. Aristomenis Katsiolis, Veterinary Officer, Department of Zoonosis, Directorate of Animal Health, General Veterinary Directorate, Ministry of Rural Development and Food.

The Brucellosis programme in Greece is regulated by the Ministerial Decision 258735/17.07.2007 (amended by MD 258963/29.08.2008). It is under the supervision of the Department of Zoonosis - Directorate of Animal Health - and applied only by official veterinarians.

Brucellosis is a notifiable disease and an occupational disease. Treatment of brucellosis in farm animals is prohibited by law. Only official veterinarians are involved in the program. Historically, the vaccination programme with Rev.1, administered by the subcutaneous route to all female animals from 3 to 6 months of age, started in 1975. In 1992 and 1993, a test-and-slaughter program was implemented in the Islands and Peloponnesus, respectively, and, in 1994, the test-and-slaughter program was extended to the rest of Greece. However, a progressive increase of human cases reporting led the National Authorities to adopt a control programme based on vaccination of all animals (adult and young) using Rev.1 (administered by the conjunctival route) in the Mainland (1998) and Evia. In 2003, vaccination was re-implemented in Lesvos and Leros and in Thasos in 2008. Up to date, in 2012, Greece continues to present two different approaches in implementing the brucellosis programme: a control programme in the Mainland, Evia and some Islands (Lesvos, Leros and Thasos) and an eradication programme in most of the Islands area (Figure 2).

Data on Human reported cases was presented revealing stabilization around 100 cases in the last 3 years (2009-2011).

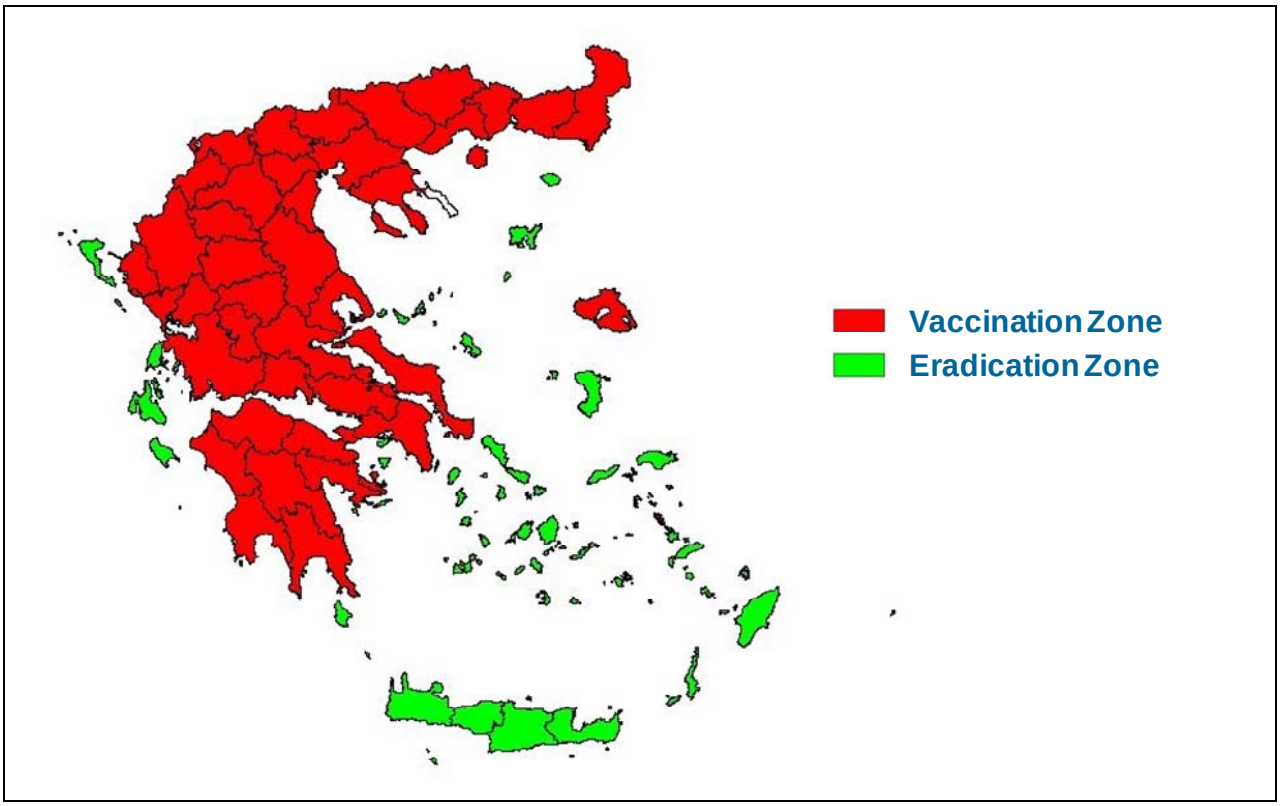

Figure 2. The brucellosis program in sheep and goats in Greece in 2012

Vaccination programme in Mainland, Evia and isles of Lesvos, Leros and Thasos

This programme foresees the compulsory mass vaccination of all non-pregnant females over 3 months old with Rev.1 by the conjunctival route, at dose $5x10^8$ – $2x10^9$. Movements of animals from the vaccination zone (control area) to the eradication zone are prohibited by law. The vaccine used is the *B. melitensis* strain Rev.1, administered by the conjunctival route, with the standard dose. Animals are identified with a tattoo marking a "V" letter and the year of vaccination. The official veterinarian that vaccinates the animals has to fill up a vaccination card (x2) and must report monthly to the Central Authority of the Ministry.

In order to control the effective vaccination in field conditions, it is foreseen to control the effectiveness of vaccination 3-4 weeks after the vaccination, by blood sampling 15% of the herds (25% of the animals in each herd); however, this provision has not been carried out with the due frequency.

The adult males kept for breeding are not vaccinated; however, they are serologically tested every year after the completion of vaccination in the flock. If positive, they are slaughtered and compensated in accordance with the current applicable financial rules.

The Veterinary Authorities presented data on the vaccination campaign from 2007 to 2011 (Figure 3), revealing similar coverage along the years.

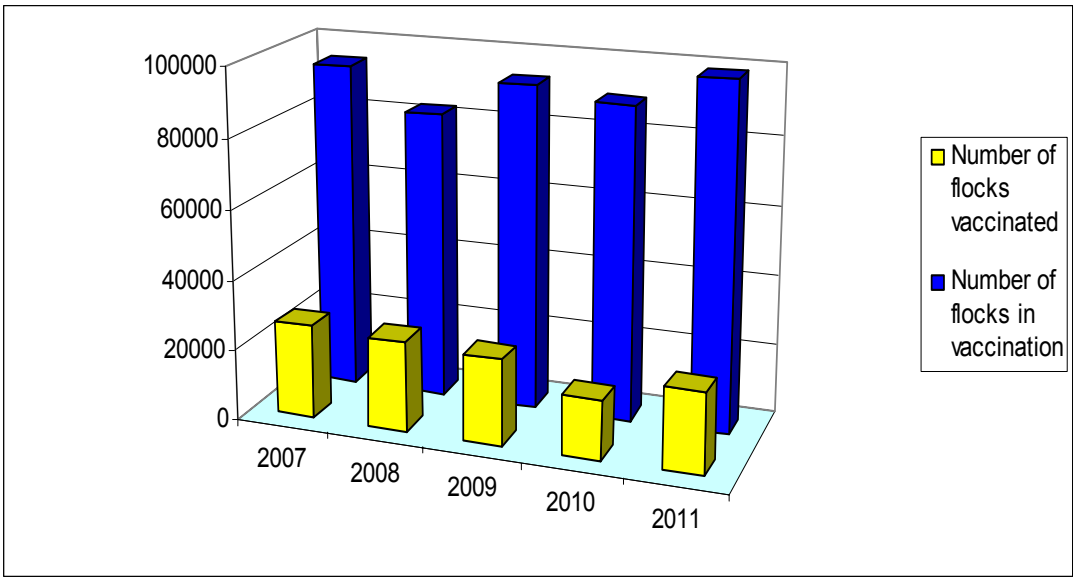

Figure 3. Vaccination Zone: No of flocks to be vaccinated and No of flocks vaccinated during the 2007-2011 period.

For year 2011, the data presented at the annual report was the following: Flocks: 99,502; flocks under the programme: 98,891; flocks vaccinated: 23,080.The percentage of vaccinated flocks is therefore 23.3%. Animals: 11,726,056; Adults vaccinated: 152,852; Young vaccinated: 759,938.

Considering a 15% replacement rate, it would have been expected a number of 1,758,908 vaccinated animals (11,726,056 x 15%) in 2011, to have a 100% coverage of young animals. ,The percentage of young vaccinated animals reached in 2011 was only 43.2% (759,938 / 1,758,908).

Test and slaughter programme in the Islands

In the eradication area, (Greek islands, except those mentioned previously), the programme aims at testing all animals over 6 months of age using the Rose Bengal Test (RBT) as screening method and the Complement Fixation Test (CFT) as a confirmatory method. The animals positive to both tests are slaughter and compensated. Vaccination is prohibited.

Flocks are classified according to the following sanitary status:

M1 (unknown sanitary status) - Holding without any information about brucellosis. The animals have never been tested for brucellosis.

M2 (at least one negative serological test) - All animals over 6 months old tested serologically at least once with negative results.

M3 (Brucellosis [*B. melitensis*]-free ovine or caprine holding) – the following criteria have to be fulfilled:

- no clinical symptoms in the last 12 months;
- all or some of the animals are vaccinated with Rev.1 (before the age of 7 months);
- non-vaccinated animals over 6 months and vaccinated animals over 18 months old have undergone 2 serological tests with an interval of at least 6 months, with negative results;
- after the tests, all the animals introduced, are either born in the holding or are introduced from holdings with the same or superior Brucellosis status.

M4 (Officially brucellosis [*B. melitensis*]-free ovine or caprine holding) – the following criteria are applied:

- no clinical symptoms for the last 12 months;
- no animal has been vaccinated against brucellosis during the last 2 years;
- animals over 6 months old have tested negative to 2 serological tests with an interval of at least of 6 months;
- after the tests, all the animals are born on the holding or introduced from M3 or M4 holdings.

M+ (one positive serological result at least) - In case one or more positive serological result is observed during the surveillance, the holding is quarantined, positive animals are tattoo marked by official vets within 3 working days from the issuing of lab results and they must be slaughtered within 30 days by the farmer. Compensation is paid within 90 days after the slaughtering of the animals.

An epidemiological investigation is carried out to determine the source of infection, including laboratory investigations on abortions and on other susceptible species (cattle, dogs). Aborted embryos as well as the foetal membranes must be collected and sent to the Veterinary Reference Laboratory. Milk is not used for human consumption (Reg. 853/2004/EC) and manure and bedding of animals must be collected in a specific spot and sprayed daily with suitable disinfectant. Fodder in contact with fluids of a miscarriage are destroyed by burning or are buried.

After the slaughtering of positive animals and the prescribed cleaning and disinfections, the repopulation of the holding is possible after two months, with animals originating from M4 holdings, in case of total slaughtering. A serological test on all animals over 6 months of age is carried out 2 months after their introduction. In case more than 50% of the animals of the holding are infected it may be recommended the slaughter of all animals

with compensation only for the female animals and the positive male animals. In Regions where the infection rate among farms is extremely low 0.1-1%, the total slaughter and compensation of the animals may be recommended. In OBF Regions, in case of a positive result all animals must be slaughtered and compensated.

To be re-qualified, after the last positive animal has been slaughtered, a M+ flock, has to be submitted to three negative blood tests on adult animals at 6 month intervals.

For the maintenance of the official free brucellosis status (M4) in a holding that is located in an area not recognized as official brucellosis-free, one annual serological test on all male animals over 6 months old and on all new animals introduced in the flock, as well as 25% of adult females (and minimum 50 adult females/holding), is required.

One serological test every 3 years is possible in areas where 99% of the holdings are M4 and when the rest are under veterinary surveillance.

Suspension of M4 status is considered when (1) there is contact with animals of inferior status, (2) testing is not conducted towards the maintainance of officially free status or (3) positive animal(s) are identified. There is no time limit to maintaining the suspended M4 status. In cases (1) and (2), the status M4 is restored after 1 serological negative test of all animals over 6 months old.

According to regulations, the OBF status of a Region is granted if 99.8% of the holdings are M4 or an eradication programme is applied in the Region and no case of brucellosis has been recorded for the last 5 years, every case of abortion is tested, vaccination has stopped for at least 3 years, and there is an animal identification system in place.

Implementation of the programmes is proved by auditing the consignment of blood samples to vet laboratories, the certification of cleaning and disinfection, the auditing of monthly results forwarded to the Central Authority of the Ministry, and the auditing of the epidemiological investigation forms.

In an OBF region, in case of a positive result, all animals must be slaughtered and compensated for.

Penalties are also foreseen in case of non-compliance, such as the retention of the payment of compensation and other administrative and criminal penalties as provided in Article 23 of Law 248/1914 (A`110) as amended by Article 13 of Law 2538/1997 (A`242).

Data on the eradication programme from 2007 to 2011 were presented (Figure 4), revealing also similar coverage along the years. For 2011, the flocks under the programme were 25,783 (different from the final report 26,117), while the herds tested were 1,209. The percentage of tested herds is therefore 4.7%. The flocks found positive in 2011 were 65.

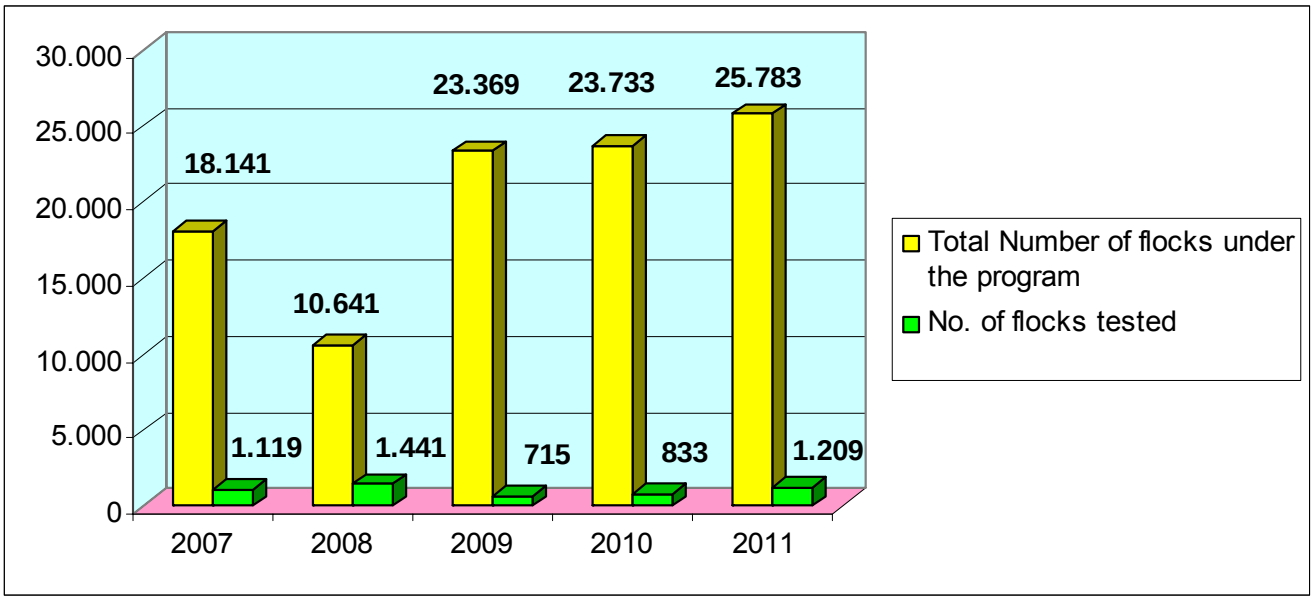

Figure 4. Eradication zone: No of flocks tested and No of flocks under the programme during the 2007-2011 period.

The graphic on the distribution of flock classification (Figure 5) showed that, in year 2011, more than half of the flocks were considered M1 (53.3% according to the annual report), while 27.2% is classified as OBF (M4).

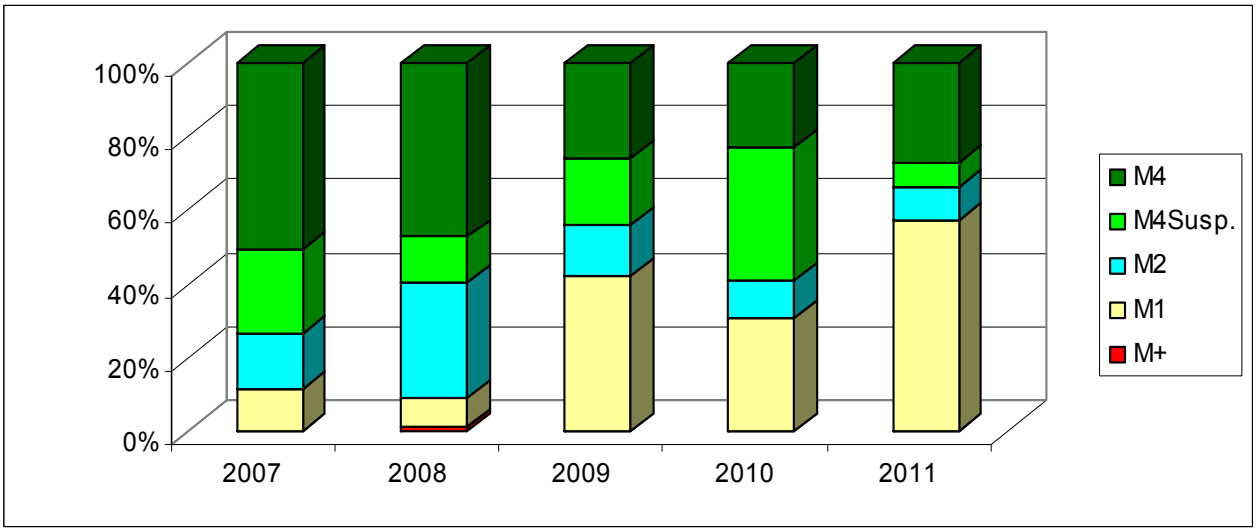

Figure 5. Eradication zone. Flock classifications during the period 2007-2011.

During the discussion, questions were raised and clarifications were provided about the data presented.

Veterinary Authorities stated that the difficulties encountered in the implementation of the vaccination programme are mainly due to the lack of personnel (less than 300 veterinarians are available at National level for implementing both programmes at field

level), and the lack of resources (vehicles, vaccine provision, protective materials). The seasonality of lambing, as well as the practice of selection of breeding animals (for restocking purposes) after Easter and the practice of transhumance (from March to June), play also a role by limiting the time available for the operations.

The use of parallel testing, *i.e.* the slaughtering animals positive to one of the two tests (either RBT or CFT) in infected flocks is currently not applied (unless there are more than 5% positive animals to RBT), as it is foreseen by the programme that animals positive only to RBT are not eligible for compensation.

The application of vaccination of young animals within the eradication programme was also questioned, as well as the non-vaccination of young male animals. It was explained that they are currently left unvaccinated to play the role of sentinels in the flock.

Another issue raised was about the need to submit abortion samples coming from already recognized infected holdings to the laboratory. This practice was justified as an investigation and surveillance of flocks in infected areas using a sample of animals, regardless of risk of infection.

4. Progress achieved in relation to the last TF visit in the Regions of Ioannina, Thesprotia, Corfu and Lefkada.

Dr Myrsini Tzani, Head of the Department of Zoonosis, Directorate of Animal Health, General Veterinary Directorate, Ministry of Rural Development and Food

A state-of-the art of the brucellosis (*B. melitensis*) programme for the Regions in question was requested by the Group in order to follow-up actions taken after the recommendations provided during the last TF visit in Greece (Ioannina, 2002, see Annex III). Data about flocks tested and flocks positive during the period 2002-2011 were presented.

As far as data of the eradication programme for the past five years are concerned, year 2008 was the one with the best flock coverage for Corfu (190 flocks tested out of 322, 59%), and 2007 was the year with the best flock coverage for Lefkada (78 flocks tested out of 325, 24%). In year 2011, 1,237 animals (34 flocks) were tested in Corfu, with no positive results, and most flocks were classified as M2. In Lefkada, in 2011, no adult animal was tested and 189 flocks were classified with M4 suspended status.

Regarding the vaccination programme, and for the past five years, Ioannina reached the best coverage in 2006 (3,250 flocks vaccinated out of 4,360, 74.5%) and Thesprotia in 2008 (569 flocks vaccinated out of 2,259, 25.2%).

It was explained that, despite these calculations, in Ioannina, the vaccination coverage should be considered good, given that many small flocks do not have replacement animals, and therefore, for this reason, are considered “non-vaccinated” for the statistics.
In year 2011, in Ioannina, 1,468 flocks (44.8%) and 29,059 animals were vaccinated. Considering that the total population of animals is 288,399 heads, and considering a replacement rate of 15%, the group estimated 43,260 animals to be vaccinated, therefore, considering that only young animals are subjected to vaccination, the vaccination coverage can be estimated around 67.2%. In this Region, the sampling of 1,030 males from 312 flocks resulted in 14 positive animals in 8 farms. The number of human brucellosis cases reported was three.
In year 2011, 248 herds with 14,205 animals were vaccinated (10.4%) in Thesprotia. Considering that the total population of animals is 221,837 heads, and considering a minimum replacement rate of 15%, the group estimated 33,276 animals to be vaccinated, therefore, considering that only young animals are subjected to vaccination, the vaccination coverage can be estimated around 42.7%. In this Region, the sampling of 17 males resulted in no positive animals. The number of human brucellosis cases reported was zero.
It was concluded that the implementation of the programme is highly dependent of the availability of sufficient staff and resources. The economic crisis and implementation of “Kalikratis” law resulted in further reduction of the programmes implementation.
During the discussion, questions were raised about data collection and about the reporting system used to monitor the programme. The overall feeling was that there are difficulties in maintaining an updated database, as many flocks and animals not existing anymore were not removed from the database. The level of accomplishment of the programme, planning of activities and data collection also varies according to the Regions.

5. **Periphery of East Macedonia and Thrace. Structure and organization of Veterinary Services. Organisation and implementation of the programme. Evolution, current situation and perspective of ovine and caprine brucellosis. Evolution of the main epidemiological indicators. Actions to be taken in zones of high prevalence.**

   Dr Achilleas Sachpatzidis, Head of the Veterinary Directorate of the Eastern Macedonia and Thrace.

East Macedonia and Thrace is the fourth largest of the thirteen Regional administrative Regions of Greece. The Region is located to the north-eastern part of the country, and includes the eastern part of the Region of Macedonia along with the Region of Thrace, and the islands of Thasos and Samothrace. It covers a total area of 14,157 Km^2 and has a population of 600,000 inhabitants (Figure 6).

Figure 6. Periphery of East Macedonia and Thrace.

The organization of the Rural Economy and Veterinary Region Directorate of East Macedonia and Thrace includes six Rural Economy and Veterinary Regional Unit Directorates, with 25 Local Veterinary Stations. Currently, the total number of sheep and goats in the Region is 1,284,011 animals in 8,272 farms. Most of the farms are small (3,414 farms with less than 100 animals) and medium (3,252 farms with 101 - 300 animals) size. In year 2011, 6,906 farms were under the Brucellosis programme.

The personnel of the Region consists of 116 people (55 Veterinarians, three technicians, 22 administrative staff, 3 computer personnel, 8 artificial inseminators, 4 drivers, 18 workers and 3 utility staff). In the last five years, there has been a progressive reduction of personnel. Further reduction is planned for the next three years. The personnel has to cover all veterinary activities (slaughterhouses, food control, other eradication control programmes, residues programme, animal welfare issues, etc.).

The programme includes mass vaccination of adult and young females. In flocks already vaccinated with Rev.1, serological examination of males is used as a sentinel for revealing the presence of infection, and serological testing of vaccinated sheep is used to confirm

the effectiveness of vaccination. As far as the implementation of the vaccination programme is concerned, data for the period 2007 - 2011 are shown in Figure 7.

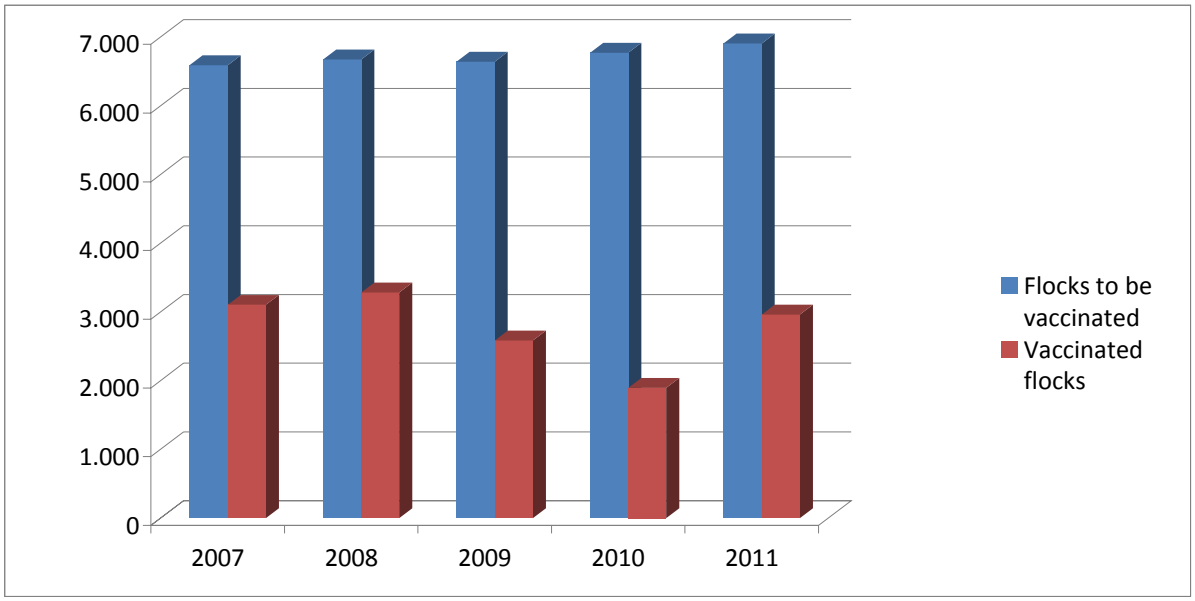

Figure 7. Periphery of East Macedonia and Thrace: No of flocks to be vaccinated and No of flocks vaccinated during the 2007-2011 period.

In year 2011, 2,964 herds were vaccinated (42.9%), with 102,876 animals (22,130 adult and 80,746 young animals). Considering a replacement rate of 15%, the group estimated 172,897 animals to be vaccinated, therefore, if it is considered that only young animals were subjected to vaccination, the vaccination coverage can be estimated around 46.7%. No data on sampling of males were presented. Human cases still exist (an outbreak occurred in Thasos in 2008).

The achievement of the target of 100% coverage for flock vaccination is considered by the Veterinary Authorities rather remote. The main reasons are:

- The very large animal population. The number of sheep and goats farm present would require approximately 2800 visits-working days (*i.e.* 2-3 visits per day by a two-persons working team).
- The fact that many farms are located in mountain areas with difficult access, implies additional time spent for the visits (go and return) and the need for official vehicles.
- The lack of staff (vets, assistants, drivers, administrative), and the planned further reduction in the next years. The difficulties on planning activities are also due to the period of appointment of seasonal personnel, to a timely supply of materials and to the lack of official vehicles.

- The short time-period available for implementation of vaccination, which cannot be allocated throughout the year given that most of breeding animals are kept for restocking only after Easter.
- Lack of informatic technology (computerization and information technology application) for the effective monitoring of the implementation of the programme (a pilot DB programme was created but revealed itself inapplicable for the registration of data of extensive vaccination).

The strategy of mass vaccination was chosen due to the facts that this Region presents a very large small ruminants population, a production system that implies the use of common pastures and common watering points, as well as a large number of flock movements (summer and winter pastures), an extensive exchange of rams, and a high prevalence of brucellosis. Furthermore, an eradication strategy would require a larger volume of interventions (blood sample collection) and the laboratory capacity might not be sufficient to handle large number of blood samples.

Local Veterinary Authorities considered that there is a need for a radical restructuring programme covering the following possible actions:

- To concentrate efforts in a complete mass vaccination programme during the next three years. To vaccinate 1/3 of the farms each year and all breeding animals of already vaccinated farms.
- To reinforce the staff as the existing staff and structures, including the use of seasonal staff (accredited vets and assistants) and to solve the problem of movement restrictions and overtime work for the staff of Veterinary Services;
- To pay incentives to individuals.
- To get an adequate programming for the next three years (tendering and supply of materials and vaccines, early recruitment of staff and contracts signing).
- To establish an effective control system for the accomplishment of tasks.
- To follow-up the evolution of the programme with epidemiological studies in order to establish conditions to move to the eradication programme (*e.g.* when prevalence reaches less than 5%).

In the discussion of this presentation it was commented that the analysis presented was very good and the identification of problems and possible solutions were very well established.

6. **Periphery of Crete. Structure and organization of Veterinary Services. Organisation and implementation of the programme. Evolution, current situation and perspective of ovine and caprine brucellosis in the Periphery of Crete. Evolution of the main epidemiological indicators. Actions to be taken in zones of high prevalence.**

   Eva Foukaki, Veterinary Officer, Regional Unit of Heraklion, Crete.

Mrs. Eva Foukaki from the Regional Veterinary Unit of Heraklion, Crete, illustrated the eradication programme on sheep and goat brucellosis and the current situation.

The Island of Crete (Figure 8) constitutes a Periphery, divided into four Regional Units (former “Nomos”).

Figure 8. Periphery of Crete.

Agriculture and animal husbandry in the mountainous and hilly areas of Crete still plays today a significant role. The main farming system consists of mixed holdings (sheep and goats). Most animals are reared in a semi-extensive system. Animals are kept on free pastures until their first lactation, afterwards animals are housed in makeshift shelters where they are fed and milked. In most holdings, sheep and goats are hand milked. Modern automatic milking systems are rare.

The Veterinary Directorate of the Periphery of Crete is divided in 4 Regional Units (Figure 9): Heraklion, Lasithi, Rethimnon and Chania. The total number of permanent personnel is approximately 40, including 31 Official Veterinarians, one food technologist, two assistants and five administrative staff. In 2011, additional temporary staff was employed, in 2012 this was not possible anymore.

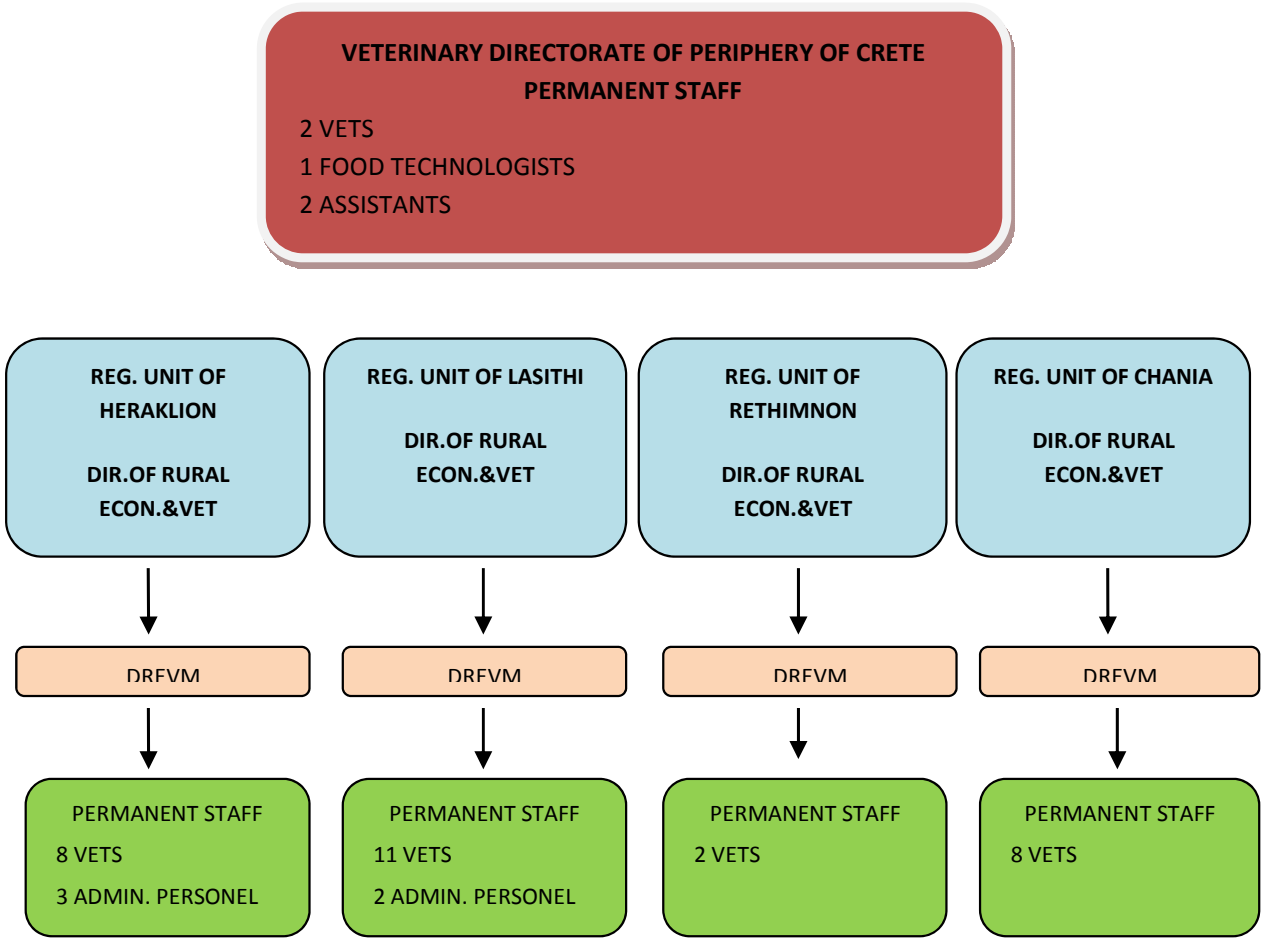

Figure 9. Veterinary Service structure of Crete.

The Veterinary Directorate of Crete deals with a total sheep and goat population of approximately 3.5 M divided among more than 16,000 holdings (Table 1).

Table 1. Sheep and goat population – Crete.

Region	Farms	Population
Lasithi	1,385	276,436
Heraklion	4,588	989,187
Rethymnon	6,634	1,550,260
Chania	3,679	674,405
Total	**16,286**	**3,490,288**

In the framework of the programme, blood samples from the four Regions of the Periphery of Crete are tested by the State Veterinary Laboratory of Crete located in the Region of Heraklion.

The trend of the number of blood samples tested, and positive ones, were presented per Region (Lasithi, Heraklion, Rethymnon and Chania). In total, 70 samples were positive out of 29,456 analyzed samples in 2009; 550 out of 16,294 in 2010, 118 out of 80,944 in 2011 and 68 out of 7,204 in 2012 (first semester).

Most of the positive samples from year 2010 onwards can be linked to an outbreak detected in the Region of Heraklion. The figures of sampling and testing are clearly conditioned by the employment of temporary staff that was not constant across the campaigns.

Data of certification of flocks for year 2011 (M1, M2, M+, M4 and M4 suspended) from the Regions of Lasithi and Heraklion were compared. Conclusions are that there is a lack of homogeneous criteria for the classification of M4 flocks that were not tested in the last 12 months (as foreseen by Annex A to Directive 91/68/EC): in the Region of Lasithi, flocks were classified as M4 suspended, while in the Region of Heraklion such flocks were classified as M1 (unknown status).

Epidemiological information was provided according to the standard tables of Annex I to Commission Decision 2008/425/EC. The most relevant conclusion is that the very low and fluctuating coverage of the programme through the years (2007-2011, Table 2) makes a consistent assessment of the rates of Brucellosis positivity not possible.

Table 2. Percentage of flocks/animals coverage – Crete

Year	% coverage of flocks within the programme	% coverage of animals within the programme
2007	1.20	1.07
2008	13.60	9.51
2009	1.37	0.69
2010	0.97	0.52
2011	3.75	2.42

With regards Human Brucellosis, according to data supplied by the Public Health Directorate of Crete, 13 cases were reported in a ten year period: 7 cases in 2006, 2 cases in 2010 and 4 cases in 2011. This accounts for an average rate of 0.4 cases per 100,000 inhabitants for the period 2005-2009 (source: KE.EL.P.NO). The human infection is contracted by direct contact with infected flocks (farmers and family, dealers, veterinarians, abattoirs worker, dairy industry etc) but also by consumption of illegal untreated fresh dairy products.

As the main conclusion, the speaker stated, that the success of the programme in the next years will be greatly conditioned by the amount of human resources devoted to the different duties, both permanent veterinary and auxiliary staff.

7. Veterinary laboratory Centre of Thessaloniki

Vaia Petsaga, Head of the Brucellosis Department, Institute of Parasitic and Infectious Diseases, Veterinary Laboratory Centre of Thessaloniki.

The National Reference Lab for brucellosis is located in Larissa. The Lab of Thessaloniki, which analyses samples from the Central and West Macedonia regions, presented its activities during the meeting. These regions have a significant number of sheep and goats. The permanent staff of the Lab includes two vets and one assistant. Occasionally the Lab may have seasonal staff, usually one person. The lab cannot predict in advance the number of samples to be analysed during the year, because the scheduling of sampling is done by the Prefectures. The samples received by the Lab are normally the ones collected from male animals which, according to the legislation in force, are not vaccinated because they serve as sentinels for the presence of the disease in the flocks. Samples from females are collected only in case of abortion and the testing for antibodies against *Brucella* spp. is carried out together with testing for other abortive agents. The Lab receives also samples from vaccinated animals, generally collected one month after vaccination in order to check the effectiveness of vaccination; however, the number of these samples is small. Isolation of *Brucella* spp. is no longer carried out, mainly for security reasons, and this kind of examination is currently carried out only in the Central Lab of Larissa. Figures about samples analysed for *Brucella* spp. antibodies by the State Lab of Thessaloniki in 2010 and 2011 were presented and are shown in Table 3. It can be noted that in 2011 there was a remarkable increase in the overall number of samples analysed.

The antigens used for RBT and CFT are provided by the National Reference Lab and distributed to the Labs involved in the program, each of them carrying out a dedicated tender on yearly bases. However, given that the number of tests to be carried out during a given year is not known by the Lab, there is a risk that Labs run out their antigen stock if the number of samples collected by the Veterinary Services is higher than expected. In this case, the National Reference Lab of Larissa may check for antigen stocks in other Local Labs and then re-distribute it. Production of red blood cells for CFT testing is done directly by the Lab with their own sheep. The contacts with the National Reference Lab

(Ring Trials, Seminars, and Training) were regular in the past, with yearly participation to Ring Tests; nowadays, given the reduction of staff in the Reference Lab these contacts are becoming less frequent. A written SOP for performing RBT and CFT is available at National level and is distributed by the National Reference Lab. Only the National Reference Lab is currently accredited according to ISO 17025, while three out of the eight local Labs involved in the Brucellosis programme have started the process of accreditation. The Lab of Thessaloniki is planning to start this procedure in the near future.

Table 3. State Lab of Thessaloniki. Samples analysed for *Brucella* spp. antibodies in 2010 and 2011.

	Year 2010				Year 2011			
	RBT	**RBT+**	**CFT**	**CFT+**	**RBT**	**RBT+**	**CFT**	**CFT+**
Thessaloniki	5,999	150	577	80	7,517	126	552	100
Imathia	19	4	10	3	32	1	12	0
Pella	801	6	6	3	80	0	0	0
Pieria	13	0	0	0	316	3	14	1
Kilkis	836	17	119	7	4,199	112	424	81
Halkidiki	5,151	78	345	47	5,547	35	235	26
Kozani	16	0	0	0	1,011	24	123	19
Grevena	1,114	33	219	20	1,659	23	113	17
Florina	0	0	0	0	1,821	31	168	20
Kavala	8	0	0	0	3	1	3	0
Kastoria	0	0	0	0	1,910	9	47	4
Evros	0	0	0	0	7	1	2	0
Total	**13,957**	**288**	**1,276**	**160**	**24,102**	**366**	**1,693**	**268**

CONCLUSIONS

1. The structure of national and local veterinary services has not been improved as suggested by the European Commission and substantiated by the recommendations of the Task Force (*i.e*. Ioannina 2002 – see Annex III).

2. There is still no vertical chain of command in the Veterinary Services, which weakens the communication and coordination between central and local level and may compromise the implementation of the programme.

3. The quantity of data collected and its validity is not sufficient to support a correct epidemiological analysis and the adequate planning of the programme. Data management needs improvement both at central and local levels. In particular, a national database and Information Technology (IT) system for animal movements and disease control has not been fully implemented yet.

4. Current official resources are inadequate and no evident efforts have been made to increase the staff, materials and equipment dedicated to the activities to be carried out in the framework of the brucellosis programme and, in particular, the inclusion of private veterinarians or the turn-over of retired officials.

5. The programme, as approved by the Commission for year 2011, has not been implemented as foreseen. The targets indicated in the programme for 2011 have not been met.

6. The communication and collaboration between the human sector and the animal health sector show weaknesses and this could contribute to an underestimation of the actual number of brucellosis human cases.

7. In the context of the mass vaccination programme (mainland), the current practice of leaving non-vaccinated males in vaccinated flocks for monitoring purposes may pose the risk of these animals further transmitting the disease within infected flocks and to other flocks, if sold.

8. The testing coverage in islands (eradication programme) is not sufficient to demonstrate the freedom from disease in these areas. Moreover, in recent years, the presence of the disease has been disclosed in several islands by the occurrence of human cases.

9. Resources allocated to laboratories are not sufficient to fulfil the tasks foreseen in the EU legislation. Regional laboratories are not yet accredited according to ISO 17025 standard.

RECOMMENDATIONS

1. The increase of the human resources available for the programme should be urgently considered by central and local authorities as the primary key for any progress of the epidemiological situation. Consideration should be given to the following measures:

- To increase the number of permanent staff or hire temporary staff for seasonal activities (*i.e*. vaccination).
- To create flexibility for temporary reallocation of staff.
- To involve private veterinarians in the activities carried out in the framework of the programme;

2. It is recommended to better organize the work in advance, both at local and national level, taking into consideration putting additional efforts in critical areas.

3. The people in charge of monitoring the programme should exchange experience with other Member States.

4. Within the mass vaccination programme, the benefit of leaving non vaccinated males for monitoring purposes should be weighed against the possibility these animals transmitting further the disease.

5. Increasing current vaccination coverage (percentage of vaccinated animals within farms and proportion of vaccinated farms) is essential for the success of the programme

6. Within the eradication programme, in islands in which the infection has been confirmed either by the presence of positive flocks or the occurrence of human cases, vaccination of young replacement animals should accompany the current test-and-slaughter policy.

7. Under the current situation, the systematic serological testing to confirm vaccine-induced antibodies should be discontinued. However, the whole vaccination system should be kept under control, *i.e.*: quality control, transport, storage, (cold chain) and application.

8. In infected flocks, animals positive to RBT should be slaughtered regardless to their testing with CFT. If possible, testing should be carried out in parallel, *i.e.* animals positive to either RBT or CFT should be slaughtered.

9. The use of bacteriological confirmation should be improved as a complementary tool to identify infected flocks. However, in flocks already confirmed as infected, it is not necessary to submit further samples for bacteriological confirmation.

10. Any animal deemed to be infected or to pose a risk of spreading infection should be slaughtered under the programme and the owner should be compensated.

11. Efforts should be made to maintain sufficient budget, as well as permanent and well trained staff, at the NRL, to fulfil the tasks foreseen in the EU legislation (*e.g*. ring trials, training, reagent and vaccine control, as well as *Brucella* strain confirmation and typing). In addition, efforts should be made towards accreditation of laboratories according ISO 17025, as well as the revision of relevant SOP.

12. Identification of animals is a key tool in eradication programmes, therefore, efforts should be made for improvement of livestock identification and registration, as well as the electronic identification system

13. The final development and the complete implementation of a National Database and information system for the management of the eradication programme should be given priority.

14. The commitment of farmers should be actively encouraged in the implementation of control measures foreseen in the brucellosis programme.

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

Annex I

MEETING OF THE BRUCELLOSIS SUB-GROUP OF

THE TASK FORCE FOR MONITORING DISEASE ERADICATION

HELD IN HALKIDIKI, GREECE, 14-15 JUNE 2012

PARTICIPANTS

Task Force Brucellosis Sub-Group - members

- Fabrizio DE MASSIS, Chairman, Italy
- Manuel DURAN-FERRER Spain
- Bruno GARIN-BASTUJI France
- Maria LIAPI Cyprus
- Ernst STIFTER, Italy
- Yolanda VAZ Portugal

European Commission (DG SANCO)

- Valentina PIAZZA (Head of Sector: Veterinary-Unit G5- Veterinary Programme)
- Kenneth ELLIOT (Deputy Head of Unit- Unit F6-Unit Management Plan-FVO)

Greek Representatives (main list)

▪ Spiridon Doudounakis	Director, Directorate of Animal Health, General Veterinary Directorate, Ministry of Rural Development and Food.
▪ Myrsini Tzani	Head of the Department of Zoonosis, Directorate of Animal Health, General Veterinary Directorate, Ministry of Rural Development and Food.
▪ Aristomenis Katsiolis	Veterinary Officer, Department of Zoonosis, Directorate of Animal Health, General Veterinary Directorate, Ministry of Rural Development and Food.
▪ Achilleas Sachpatjidis	Head of the Veterinary Directorate of the Eastern Macedonia and Thrace.
▪ Eva Foukaki	Veterinary Officer, Regional Unit of Heraklion, Crete.
▪ Vaia Petsaga	Head of the Brucellosis Department, Veterinary Laboratory Centre of Thessaloniki.

Annex II

MEETING OF THE BRUCELLOSIS SUB-GROUP OF

THE TASK FORCE FOR MONITORING DISEASE ERADICATION

HELD IN HALKIDIKI, GREECE, 14-15 JUNE 2012

AGENDA

Task Force Brucellosis Sub-group visit to Greece

14th and 15th June 2012

AGENDA

Timing	*Item*	*Presenters/Rapporteur*
DAY ONE	**Polygyros - Halkidiki**	
09:30	Welcome and introduction	Spiridon Doudounakis
09:45	Organisation and structure of the Central and Regional Veterinary Authorities.	Spiridon Doudounakis
10:00	Structure and distribution of ovine and caprine livestock in Greece	Myrsini Tzani
10:15	National control and eradication programme for *B. melitensis* in sheep and goats. Progress achieved in implementing the vaccination programme (Mainland and island of Evia, Thasos, Lesvos and Leros) and the test and slaughter programme (Islands).	Aristomenis Katsiolis
11.00	*Coffee break*	
11:20	Progress achieved in relation to the last TF visit in the Regions of Ioannina, Thesprotia, Corfu and Lefkada.	Myrsini Tzani
12:00	*Questions and discussion*	
13:00	*Lunch*	
14:00	Periphery of East Macedonia and Thrace. Structure and organization of Veterinary Services. Organisation and implementation of the programme. Evolution, current situation and perspective of ovine and caprine brucellosis in the Periphery of East Macedonia and Thrace.	Achilleas Sachpatjidis

	Evolution of the main epidemiological indicators. Actions to be taken in zones of high prevalence.	
15:00	Periphery of Crete. Structure and organization of Veterinary Services. Organisation and implementation of the programme. Evolution, current situation and perspective of ovine and caprine brucellosis in the Periphery of Crete. Evolution of the main epidemiological indicators. Actions to be taken in zones of high prevalence.	Eva Foukaki
16:40	*Questions and discussion*	
17:30	*Closure of 1st day*	
DAY TWO	**Polygyros - Halkidiki**	
09:00	State Lab of Thessaloniki	Vaia Petsaga
09:20	*Questions and discussion*	
09:40	EU Task Force Brucellosis subgroup meeting	TF BRC Subgroup
10:40	*Coffee break*	
11:00	Presentations of final conclusions and recommendations by the Group - Final opportunity for questions and discussions	All Speakers
12:00	*Closure of the meeting*	

Annex III – Final recommendations of the bruellosis subgroup during the last Task Force visit in Greece – Ioannina, 3-4 July 2002.

1. General organisation of tasks and resources

- The human resources of the vet services cannot face all tasks that are attributed to them. It is inevitable to increase the personnel working for the programme. Furthermore, some tasks could be assumed by private veterinarians (related to the programme and to the clinical work).
- The provision for a higher mobility of veterinarians between prefectures to concentrate human resources where needed for the programme, is also an alternative.

3. Vaccination programme

- The vaccination should be speeded up urgently in order to allow the accomplishment of the objectives of the programme. Furthermore, the existence of non-vaccinated flocks poses real threats to human health. The new database will be very useful to analyse and improve the situation.
- The follow-up of mass vaccination with the continuous vaccination of young replacements requires a capacity of coverage of 100% of the population. The necessary human resources should be provided to the veterinary services.

4. Test and slaughter programme

- The programme in the islands should cover annually the totality of flocks. Necessary resources should be mobilised for the accomplishment of the programme.
- The suspended M4 status should be considered in the database for a better understanding of the real situation.
- The results obtained in Creta are of concern, threatening the health status of the island, and could justify a special programme (including vaccination) and a better control of the animal movement within the island.