European Food Safety Authority

ZOONOSES MONITORING

GREECE

The Report referred to in Article 9 of Directive 2003/99/EC

TRENDS AND SOURCES OF ZOONOSES AND ZOONOTIC AGENTS IN HUMANS, FOODSTUFFS, ANIMALS AND FEEDINGSTUFFS

including information on foodborne outbreaks, antimicrobial resistance in zoonotic agents and some pathogenic microbiological agents.

IN 2011

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Greece

Reporting Year: 2011

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/ EC*. The information has also been forwarded to the European Food Safety Authority (EFSA).

The report contains information on trends and sources of zoonoses and zoonotic agents in Greece during the year 2011 .

The information covers the occurrence of these diseases and agents in humans, animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and commensal bacteria as well as information on epidemiological investigations of foodborne outbreaks. Complementary data on susceptible animal populations in the country is also given. The information given covers both zoonoses that are important for the public health in the whole European Community as well as zoonoses, which are relevant on the basis of the national epidemiological situation.

The report describes the monitoring systems in place and the prevention and control strategies applied in the country. For some zoonoses this monitoring is based on legal requirements laid down by the Community Legislation, while for the other zoonoses national approaches are applied.

The report presents the results of the examinations carried out in the reporting year. A national evaluation of the epidemiological situation, with special reference to trends and sources of zoonotic infections, is given. Whenever possible, the relevance of findings in foodstuffs and animals to zoonoses cases in humans is evaluated.

The information covered by this report is used in the annual Community Summary Report on zoonoses that is published each year by EFSA.

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* Directive 2003/ 99/ EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/ 424/ EEC and repealing Council Directive 92/ 117/ EEC, OJ L 325, 17.11.2003, p. 31

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1. ANIMAL POPULATIONS

The relevance of the findings on zoonoses and zoonotic agents has to be related to the size and nature of the animal population in the country.

A. Information on susceptible animal population

Sources of information

SUSCEPTIBLE ANIMAL POPULATION: (please advise the relevant electronic summary tables on EFSA Web – based zoonoses monitoring system for 2011 Data Collection.)

Source of information: Internal Data Base computerized system of Hellenic Ministry of Agriculture (update 2011). These statistics may vary from other national or E.U. sources of animal population records.

Table Susceptible animal populations

* Only if different than current reporting year

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	meat production animals					494135	2011	21325	2011
	dairy cows and heifers					209694		7633	
	mixed herds							10668	
	- in total			159670		706696		39905	
Deer	farmed - in total	8				1010			
Ducks	- in total	559				8457			
Gallus gallus (fowl)	parent breeding flocks for egg production line	92	2011			630433	2011	6	2011
	parent breeding flocks for meat production line	267	2011			1582744	2011	84	2011
	parent breeding flocks, unspecified - in total	360	2011			2215176	2011	90	2011
	laying hens	674	2011			8468251	2011	370	2011
	broilers	7887	2011	97798915		97798915	2011	944	
Geese	- in total	383				10666			
Goats	animals under 1 year					704230	2011		

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Goats	animals over 1 year					4296918	2011		
	mixed herds					5001148	2011	18941	2011
	- in total			602812		5001148	2011		
Pigs	breeding animals			25427					
	fattening pigs			1192103					
	- in total	4067		1217530		2102820			
Sheep	animals under 1 year (lambs)					1793755	2011		
	animals over 1 year					9622254	2011		
	mixed herds					11416009	2011	55717	2011
	- in total			1953309					
Solipeds, domestic	horses - in total					31873		12561	
Turkeys	meat production flocks	59	2011			224743	2011	39	2011
	parent breeding flocks	3	2011			7950	2011	3	2011
Wild boars	farmed - in total	83		3383		6462			

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Birds	pet animals - at AI station - Surveillance	468				21991			
Cats	pet animals					136818		40473	
Chinchillas	farmed					1000		1	
Dogs	pet animals					196081		47949	
Fish	- unspecified	286				20660889			
Minks	farmed					503464		14	
Ostriches	farmed - at AI station - Surveillance	51				1046			
Other animals	- unspecified (rabbits)			54221		54221		514	
	unspecified					3130		11	

Footnote:

1.From 360 parent breeding flocks Gallus gallus 267 are for meat production line, 92 for egg production line and 1 flock is for mix production.
2. The number of slaughtered goats and sheeps indicated in the table is a part (about 70%) of the total number of slaugtered animals because of lack of data.

2. INFORMATION ON SPECIFIC ZOONOSES AND ZOONOTIC AGENTS

Zoonoses are diseases or infections, which are naturally transmissible directly or indirectly between animals and humans. Foodstuffs serve often as vehicles of zoonotic infections. Zoonotic agents cover viruses, bacteria, fungi, parasites or other biological entities that are likely to cause zoonoses.

2.1 SALMONELLOSIS

2.1.1 General evaluation of the national situation

A. General evaluation

History of the disease and/or infection in the country

DISEASE/AGENT: Salmonellosis, Salmonella spp.
Contaminated materials: Feed materials of animal origin, plant origin and Compound feedingstuffs

Surveillance system
The legal provisions in place and relevant requirements (Zoonoses Directive 2003 and Zoonoses Regulation 2160) had significantly improved the effectiveness of the existing monitoring situation and management practices in the field of Salmonella surveillance. New strategies and schemes for monitoring Salmonella zoonotic agents are in force in accordance with Community Salmonella reduction targets approved. Rapid adaptation and compliance on the new mandatory EU Salmonella control and eradication programmes were observed in all EU member states.

Measures in case of positiive findings
According to the current EU Directives and Community Legislation.

In 2010, five (5) Salmonella positive units (from fish meal) were reported from 212 sampling units tested in total under selective sampling and routine monitoring schemes.

In 2009, no Salmonella positive units were reported from 232 samples tested in total under selective sampling and routine monitoring schemes.

The method ISO 6579 (2002) is used for the detection and isolation of Salmonella serovars.

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Salmonellosis, Salmonella Serovars
INFECTED SPECIES: Poultry breeding flocks- Callus gallus

Susceptible population
Parent breeding stock for egg and meat production line is estimated around 2.372.881 birds of 355 breeding flocks (2010 national zoonoses statistics).

Surveillance system
From the past (Historical data), according to the Annex III of the Dir. 92/117, a Salmonella control program has been carried out since 1998. In 2009, the Salmonella national control programme in breeding flocks of Gallus gallus has been implemented and approved (co- financed) by European Commission. The programme was supervised by the Hellenic central veterinary competent authorities and was in line with the uniform EU guidelines and rules approved by the Commission. The results were collected, analyzed and evaluated by the Commission, EFSA and Member States in accordance with the Community pre-

defined targets towards the reduction of Salmonella prevalence in Breeding flocks of Gallus gallus (fowl).

Method used:
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars.

The Salmonella serotyping was conducted in the National Reference Veterinary Laboratory (NRVLS) for Salmonellosis in animals (located in Chalkida – Prefecture of Evia) by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Measures in case of positive findings
Slaughter of infected flocks, restrictions of placing hatching eggs to
the hatchery for as long as the disease exists and all the relevant control measures were taken based on EU Legislation and requirements in force.

Epidemiological and statistical report

The reported Salmonella Serovars from adult poultry breeders, isolated and identified during the year 2010 by the National Reference Laboratory were: S. Enteritidis (n= 5) ,S. Derby (n= 2), S.enterica sub salamae (n=1), S. Livingstone(n= 1), S. Hadar (n= 2), S. Tennessee (n=2) , S. Anatum (n=1) and S. Anatum (n=1).

The reported Salmonella Serovars from adult poultry breeders, isolated and identified during the year 2009 by the National Reference Laboratory were: S. Enteritidis (n= 5) , S. Typhimurium (n= 1), S. Blockley (n= 1) , S. Livingstone(n= 6) , S. Hadar (n= 13), S.Enterica (n= 1) , S. Umbilo (n= 1) , S.enterica sub enterica 6,7:d unspecified (n= 1).

Note: n = number of positive flocks

DISEASE/AGENT: Salmonellosis / Salmonella serovars
INFECTED SPECIES: Laying Hens and Broilers of Gallus, gallus (fowl)

Surveillance system
In 2010, Salmonella control and eradication EU- programmes in Laying hens and broilers have been implemented in the country based on suspected and objective samples submitted into the laboratories under the official investigation in 2010. Under the framework of the programme industry sampling was carried out as well.

Method used
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in Laying hens and other poultry.
The Salmonella serotyping was performed by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Fifty two (52) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Laying hens during the year 2010. The most 5 frequent Salmonella reported serovars in Layin hens at production stage is presented below:

1.S.Enteritidis (n= 6)

2.S. Typhimurium (n= 4)
3.S.Infantis (n= 9)
4.S. Branderup (n= 6)
5.S.Corvallis (n = 7)

The remaining Serovars from positive laying flocks can be analytically retrieved by the Web Reporting System

Forty one (41) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Laying hens during the year 2009. Distribution for the most 6 frequent Salmonella serovars in Layin hens – production stage is given below:

1. S.Enteritidis (n= 8)
2. S. Typhimurium (n= 3)
3. S.Corvalis (n = 4)
4. S.Newport (n=3)
5. S. Heidelberg (n= 2)
6. S.Branderup (n = 2)

Note: n = number of Salmonella positive flocks

Twenty eight (28) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Broilers during the year 2010. Distribution for the most 5 frequent Salmonella serovars in Broilers – production perios is given below:

1.S. Hadar (n= 5)
2.S. Thompson (n=5)
3. S. Tennesse (n= 3)
4.S.Infantis (n= 2)
5.S. Bredeney (n=2)

DISEASE/AGENT: Salmonellosis/ Salmonella serovars
INFECTED SPECIES: In other poultry (or other birds) and other Animals (non poultry)

Surveillance system
No specific and systematic monitoring control program in place
Data are based on clinical samples submitted to the laboratories.

Method used
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in other animals.
The Salmonella serotyping was performed by the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur)

In 2010, the reported Salmonella serovars derived from 92 tested sampling units (poultry and other animals) were: S. Typhimurium (n= 7) and Salmonella spp – unspecified (n= 6).

Recent actions taken to control the zoonoses

EU LEGISLATION FOR CONTROL SALMONELLA PROGRAMMES IN POYLTRY
ZOONOSES DIRECTIVE
HYGIENE PACKAGE

Additional information

DISEASE/AGENT: Salmonella/ Salmonella serovars
TARGET OF MONITORING: Contaminated Food

Surveillance system
Routine examination and selective official sampling at retail level, processing plan and slaughterhouse carried out based on National and Community legislation.

Method used
The ISO 6579 (2002) is used for the detection of Salmonella in food.
The Salmonella serotyping was performed by the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur)

Summary National Report (Reporting Year: 2011). Official and selective sampling – Routine monitoring

1. Broiler meat and products thereof (all categories)
Samples tested: 315
Samples positive: 8
Reported serovars : S. Enteritidis (n=1), S.Montevideo (n=1) , S. Hadar (n=4) and S. spp unspecified (n=1)

2. Pig meat and products thereof (all categories)
Samples tested: 356
Samples positive: 7
Reported serovars : S. Derby (n=2), S. Umbilo (n=5).

3. Bovine meat and products thereof (all categories)
Samples tested: 100
Samples positive: 0

4. Meat from other animals and products thereof (all categories)
Samples tested: 1
Samples positive: 0

5. Milk and milk products (all categories)
Samples tested: 418
Samples positive: 0

6. Eggs and egg products(all categories)
Samples tested: 10
Samples positive: 0

7. Fish and fish products (all categories)
Samples tested: 53
Samples positive: 0

8. Other Food (all categories)
Samples tested: 28
Samples positive: 0

2010 Overall Salmonella reported Food Prevalence (for all food categories) = 3,17 % (75/2367*100)

2.1.2 Salmonellosis in humans

A. Salmonellosis in humans

Relevance as zoonotic disease

DISEASE/AGENT: Salmonella
AFFECTED SPECIES: Humans

Surveillance system
Mandatory reporting of foodborne infections and intoxications with laboratory confirmation. Hospitalized cases are the main reporting source for further epidemiological investigation. Notification is required within 24 hours after the identification of a case.

Epidemiological history and evaluation

Results of the 2006 zoonoses monitoring period.
A total of 984 human Salmonellosis cases were reported to the competent authorities (incidence per 100.000 persons = 9). The reported cases were classified as autochone (n=749), Imported (n=131) and unknown (n=104) cases respectively. The 2006 annual incidence rate reported significantly lower compared to 2004 for Salmonellosis in humans.

History
In 2004 , 1493 (incidence: 13,70 per 100.000 inhabitants) cases of salmonella were reported including the species : S. enteritidis (309), S.typhimurium (20), S. Adaustua (2), S. Anatum (1), S.enteritica- arizonae (29), S. blockley (1), S. infantis (1), S. paratyphi (2), S.Typhi (6) and the remaining Salmonella spp. (1121).

Historically, the officially reported Salmonella cases in humans the reporting years 1998, 1999 and 2000 were 918 , 221 and 206 respectively. For the year 2001, 284 human cases were reported. Human Salmonellosis cases in 2004 caused by S. Enteritidis, S, Typhimurium and other Salmonella serotypes were 1493 in total compared to 837 (2003) and 460 (2002) in previous years. According to these data an increase of Salmonella cases has been observed during 2004 in man, but in order to epidemiologically evaluate the real trends of Salmonella incidence, we must have in mind the significant underreporting practice which leads to underestimate figures providing non representative salmonella statistics. Moreover it is important to emphasize that the factor underlined above (underestimation) is considered constant for each reporting year.

Results of monitoring
Human Salmonella Data are presented in the relevant tables of the EFSA web based electronic system for zoonoses monitoring.

Source of human infection
Mainly from the consumption of infected, contaminated and croos- contaminated food and poultry meat and products there of.

Additional information

In 2005, all Salmonella serovars derived from the Antimicrobial Resistance monitoring system are presented in the following summary list with the number of all Salmonella isolates that were serotyped.

List of isolates by serotype

Salmonella serovars	Number of isolates
Salmonella Enteritidis	732
Salmonella Typhimurium	120
Salmonella Oranienburg	24
Salmonella Blockley	17
Salmonella enterica ss. salamae	15
Salmonella Kottbus	13
Salmonella Bovismorbificans	9
Salmonella Typhi	9
Salmonella Bredeney	7
Salmonella Agona	5
Salmonella Muenchen	5
Salmonella Muenster	5
Salmonella Thompson	5
Salmonella Virchow	4
Salmonella Derby	3
Salmonella Infantis	3
Salmonella Kedougou	3
Salmonella Mbandaka	3
Salmonella Newport	3
Salmonella Paratyphi B	3
Salmonella enterica ss. diarizonae	2
Salmonella Hadar	2
Salmonella Anatum	1
Salmonella Bareilly	1
Salmonella Brandenburg	1
Salmonella Cerro	1
Salmonella enterica ss. houtenae	1
Salmonella Goldcoast	1
Salmonella Kentucky	1
Salmonella Litchfield	1
Salmonella Lomita	1
Salmonella Montevideo	1
Salmonella Paratyphi A	1
Salmonella Poona	1
Salmonella Rissen	1
Salmonella Tennessee	1
All	1006

2.1.3 Salmonella in foodstuffs

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse - Surveillance	NVL-Greece	Objective sampling	Official and industry sampling	food sample		Single	25 gr	10	0		
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	NRL-Greece	Objective sampling	Official and industry sampling	food sample		Single	25 gr	45	7	1	
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	30	0		
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant - Surveillance	NRL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	125	1		
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	5	0		
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	NVL-Greece	Objective sampling									
Meat from turkey - meat products - cooked, ready-to -eat - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	3	0		
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant - Surveillance (survey)		Unspecified	Not applicable	animal sample		Single	25 gr	100	0		

Table Salmonella in poultry meat and products thereof

	Salmonella spp., unspecified	Other serovars	S. Hadar
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse - Surveillance			
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	1	1	4
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance			
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant - Surveillance	1		
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance			
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance			
Meat from turkey - meat products - cooked, ready-to -eat - at retail - Surveillance			
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant - Surveillance (survey)			

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample > milk		Single		14	0		
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample > milk		Single		8	0		
Milk, sheep's - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample > milk		Single		7	0		
Dairy products (excluding cheeses) - butter - made from raw or low heat-treated milk - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	5	0		
Dairy products (excluding cheeses) - cream - made from raw or low heat-treated milk - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	3	0		
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail - Monitoring	NVL	Unspecified	Official sampling	food sample		Single	25 gr	1	0		
Cheeses made from sheep's milk - hard - made from pasteurised milk - at processing plant - Monitoring	NVL	Unspecified	Official sampling	food sample		Single	25 GR	49	0		
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Monitoring	NVL	Unspecified	Official sampling	food sample		Single	25 gr	297	0		
Dairy products (excluding cheeses) - dairy desserts - at retail - Monitoring [1)]	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	26	0		

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail - Monitoring	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	8	0		
Dairy products, unspecified - at retail - Monitoring [2)]	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	10	0		
Infant formula - liquid - intended for infants below 6 months	NVL	Unspecified	Official sampling	food sample > milk		Single	25 gr	5	0		

	Salmonella spp., unspecified
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	
Milk, sheep's - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	
Dairy products (excluding cheeses) - butter - made from raw or low heat-treated milk - at retail - Surveillance	
Dairy products (excluding cheeses) - cream - made from raw or low heat-treated milk - at retail - Surveillance	

Table Salmonella in milk and dairy products

	Salmonella spp., unspecified
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail - Monitoring	
Cheeses made from sheep's milk - hard - made from pasteurised milk - at processing plant - Monitoring	
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Monitoring	
Dairy products (excluding cheeses) - dairy desserts - at retail - Monitoring [1)]	
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail - Monitoring	
Dairy products, unspecified - at retail - Monitoring [2)]	
Infant formula - liquid - intended for infants below 6 months	

Comments:

[1)] yoghurt

[2)] rise putting

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Eggs - table eggs - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	animal sample > eggs		Single	25 gr	9	0		
Egg products - at processing plant - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Batch	25 gr	1	0		
Molluscan shellfish - raw - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	2	0		
Live bivalve molluscs - unspecified - at retail - Surveillance	NRL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	45	0		
- at farm - Monitoring [1)]			Official sampling			Single		7	0		
Bakery products - at retail - Monitoring [2)]	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	13	0		
Fish - raw - at border control - Monitoring	NVL-Greece	Unspecified	Official sampling			Single	25 gr	6	0		

	Salmonella spp., unspecified	null
Eggs - table eggs - at retail - Surveillance		
Egg products - at processing plant - Surveillance		
Molluscan shellfish - raw - at retail - Surveillance		
Live bivalve molluscs - unspecified - at retail - Surveillance		
- at farm - Monitoring [1)]		
Bakery products - at retail - Monitoring [2)]		

Table Salmonella in other food

	Salmonella spp., unspecified	null
Fish - raw - at border control - Monitoring		

Comments:

[1] snails

[2] different kind of pies

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from pig - fresh - at retail - Surveillance	NRL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	135	0		
Meat from pig - minced meat - intended to be eaten cooked - at processing plant - Surveillance	NRL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	25	0		
Meat from pig - minced meat - intended to be eaten cooked - at retail - Surveillance	NRL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	35	0		
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	75	2		
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	5	0		
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	10	0		
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	65	5		
Meat from bovine animals - fresh - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	35	0		
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	30	0		
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	25	0		
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	5	0		

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	10 gr	5	0		
Meat from bovine animals and pig - at retail - Surveillance [1)]	NVL-Greece	Unspecified	Official sampling	food sample		Single	10 gr	1	0		
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	10 gr	45	2		
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	5	0		
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	10 gr	1	0		
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	5	0		

	Salmonella spp., unspecified	S. Derby
Meat from pig - fresh - at retail - Surveillance		
Meat from pig - minced meat - intended to be eaten cooked - at processing plant - Surveillance		
Meat from pig - minced meat - intended to be eaten cooked - at retail - Surveillance		
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance		2

Table Salmonella in red meat and products thereof

	Salmonella spp., unspecified	S. Derby
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance		
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance		
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	5	
Meat from bovine animals - fresh - at retail - Surveillance		
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance		
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance		
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance		
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance		
Meat from bovine animals and pig - at retail - Surveillance [1)]		
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance		2
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance		

Table Salmonella in red meat and products thereof

	Salmonella spp., unspecified	S. Derby
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance		
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance		

Comments:

[1)] minced meat

Footnote:

5 positive salmonella samples in food category "pig meat - meat products-cooked -ready to eat at processing plant " are S. Umbilo

2.1.4 Salmonella in animals

A. Salmonella spp. in Gallus Gallus - breeding flocks

Measures in case of the positive findings or single cases

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

Measures in case of positive findings:
Slaughter of infected flocks, restrictions of placing hatching eggs to
the hatchery for as long as the disease exists and all the relevant control measures were taken based on EU Legislation and requirements in force.

Notification system in place

DISEASE/AGENT: Salmonellosis, Salmonella Serovars
INFECTED SPECIES: Poultry breeding flocks- Callus gallus

Susceptible population
Parent breeding stock for egg and meat production line is estimated around 2.215.176 birds / 360 breeding flocks (2011 national zoonoses statistics) raised in 90 holdings.

Surveillance system
From the past (Historical data), according to the Annex III of the Dir. 92/117, a Salmonella control program has been carried out since 1998. In 2009, the Salmonella national control programme in breeding flocks of Gallus gallus has been implemented and approved (co- financed) by European Commission. The programme was supervised by the Hellenic central veterinary competent authorities and was in line with the uniform EU guidelines and rules approved by the Commission. The results were collected, analyzed and evaluated by the Commission, EFSA and Member States in accordance with the Community pre-defined targets towards the reduction of Salmonella prevalence in Breeding flocks of Gallus gallus (fowl).

Method used:
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars.

The Salmonella serotyping was conducted in the National Reference Veterinary Laboratory (NRVLS) for Salmonellosis in animals (located in Chalkida – Prefecture of Evia) by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Results of the investigation

Epidemiological and statistical report

The reported Salmonella Serovars from adult poultry breeders, isolated and identified during the year 2011 by the National Reference Laboratory were: S.Bispebjerg (n=1), S.Kentack (n=1), S.Havana (n=3), S.Muenster (n=1), S.Enterica (n=1), S.Infantis (n=2).

Note: n = number of positive flocks

B. Salmonella spp. in Gallus Gallus - flocks of laying hens

Notification system in place

Surveillance system

In 2009, Salmonella control EU- programmes in Laying hens and broilers have been implemented in the country based on suspected and objective samples submitted into the laboratories under the official investigation in 2009.

Method used

The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in Laying hens and other poultry.
The Salmonella serotyping was performed by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Results of the investigation

Twenty three (23) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Laying hens during the year 2011. Distribution for the Salmonella serovars in Layin hens – production stage is given below:
S.Muenster (n=1), S. Haardt (n=1), S. Bovismorbifigans (n=1), S.Virchow (n=1), S.Enteritidis (n=3), S. Thompson (n=3), S. Infantis (n=1), S. Umbilo (n=1), S.Havana (n=1), .S.Hadar (n=1), S.Muenchen (n=1), S.Carno (n=1), .S.Mbandaka (n=1), S.Enterika untypable (n=1), S.Newport (n=1), S.Bovismorbificans (n=1)
S.Glostrup (n=1), S.enterica salamae (n=2), S.Stanleyville (n=1)

Note: n = number of Salmonella positive flocks

Thirty two (32) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Broilers during the year 2011. Distribution for the Salmonella serovars in Broilers – production perios is given bellow:
S.Typhymurium (n=2), S.Havana (n=1), S.Montevideo (n=1),S.Anatum (n=1)
S.Livingstone (n=4), S.enteritidis (n=10), S.Senftenberg (n=1)
S.Infantis (n=1), S.Thompson (n=2), S.Bredeney (n=1), S.Corvalis (n=1),S.Instanbul (n=1),S.Muenster (n=1),S.Tennessee (n=1),S.enterica subsp. salamae 4,12:i:- (untypable) (n=2)

Note: n = number of positive flocks

C. Salmonella spp. in bovine animals

National evaluation of the recent situation, the trends and sources of infection

Epidemiological history

In the year 2007 the reported salmonella serovars were associated with the results from an EU Pig baseline study. The study was carried out in order to identify the real and observed Salmonella prevalence in pigs in line with Community Legislation and relevant targets to reduce the prevalence over time. The majority of positive Salmonella strains were pig strains. The predominant reported serovars were: S. Typhimurium (n= 18), Salmonella spp – unspecified (n= 17), S. Derby (n=9) , , S. Enterica.sub.enterica (n= 7), S. Thomson (n=6) and S. Bredeney (n= 5) .

In a prospective study during 1985-1990, 1184 strains of Salmonella spp have been isolated from animals. The predominant serotype was S.Gallinarum. For 2002 and 2003 S. Typhimurium and S. Agona respectively had been exclusively reported based on the small sample frame tested. In the year 2004 the reported salmonella serovars were S. Typhimurium (Goats, rabbits and turtles), S. Dublin (cattle), S. Corvallis (Cattle), S. Litchfield (Turtles)and Salmmonella spp- non typed (Turtles).

Additional information

BOVINE ANIMALS AND OTHER ANIMALS (NON POULTRY)
DISEASE/AGENT: Salmonellosis/ Salmonella serovars
INFECTED SPECIES: Animals (non poultry)

Surveillance system

Not specific and systematic monitoring control program in force for the other (non poultry) animals.
Data are based on the samples incidentally submitted to the laboratories.

Method used

The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in other animals.
The Salmonella serotyping was performed by the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur)

In 2009, the reported Salmonella serovars derived from 256 tested units (animals) were: Salmonella spp – unspecified (n= 2) and S. Dublin (n= 1).

In 2008, the reported Salmonella serovars were: S. Bredeney (n= 2), Salmonella spp – unspecified (n= 2),
S. Enterica.subsp.enterica (n= 1).

Note: n = number of positive flocks

Table Salmonella in breeding flocks of Gallus gallus

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes	241	PVD	Census	Official and industry sampling	animal sample > faeces		yes	Flock	240	9	0
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - Control and eradication programmes	9	PVD	Census	Industry sampling	animal sample		yes	Flock	8	0	0
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - Control and eradication programmes	10	PVD	Census	Industry sampling	animal sample		yes	Flock	10	0	0
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - Control and eradication programmes	22	PVD	Census	Official and industry sampling	animal sample		yes	Flock	22	0	0
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - Control and eradication programmes	41		Census	Industry sampling	animal sample		yes	Flock	41	0	
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - Control and eradication programmes	82		Census	Industry sampling	animal sample		yes	Flock	75	0	
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - Control and eradication programmes	219		Census	Official and industry sampling	animal sample		yes	Flock	218	9	
Gallus gallus (fowl) - breeding flocks for broiler production line - at farm	219	PVD	Census	Official and industry sampling	animal sample		yes	Flock	219	9	0

Table Salmonella in breeding flocks of Gallus gallus

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - breeding flocks for broiler production line - day-old chicks - at farm - Control and eradication programmes (sample type sampling unit)	41	PVD	Census	Industry sampling	animal sample		yes	Flock	41	0	
Gallus gallus (fowl) - breeding flocks for broiler production line - during rearing period - at farm - Control and eradication programmes (Sample type sampling unit)	82	PVD	Census	Industry sampling	animal sample		yes	Flock	75	0	

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Bispebjerg	S. Havana	S. Kentucky	S. Muenster
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes	0	2	0	0	0	1	1	3	1	1
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - Control and eradication programmes	0	0	0	0	0	0				
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - Control and eradication programmes	0	0	0	0	0	0				
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - Control and eradication programmes	0	0	0	0	0	0				

Table Salmonella in breeding flocks of Gallus gallus

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Bispebjerg	S. Havana	S. Kentucky	S. Muenster
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - Control and eradication programmes										
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - Control and eradication programmes										
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - Control and eradication programmes		2				1	1	3	1	1
Gallus gallus (fowl) - breeding flocks for broiler production line - at farm	0	2	0	0	0	1	1	3	1	1
Gallus gallus (fowl) - breeding flocks for broiler production line - day-old chicks - at farm - Control and eradication programmes (sample type sampling unit)										
Gallus gallus (fowl) - breeding flocks for broiler production line - during rearing period - at farm - Control and eradication programmes (Sample type sampling unit)										

Footnote:

PVD is the regional veterinary authority responsible for the implementation of the programme

Table Salmonella in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-
Cattle (bovine animals) - adult cattle over 2 years - at farm - Monitoring [1)]	NRL-Greece	Unspecified	Official sampling	animal sample > organ/tissue		Animal	7	0			
Sheep - at farm - Monitoring [2)]	NRL-Greece	Unspecified	Official sampling	animal sample > organ/tissue		Animal	81	0			
Goats - at farm - Monitoring [3)]	NRL-Greece	Unspecified	Official sampling	animal sample > organ/tissue		Animal	56	0			
Pigs - fattening pigs - at slaughterhouse - Monitoring [4)]	NVL-Greece	Unspecified	Official sampling	animal sample > organ/tissue		Animal	1	0			
Solipeds, domestic - horses - at farm - Monitoring [5)]	NRL-Greece	Unspecified	Official sampling	animal sample		Animal	1	1			
All animals - farmed - at farm - Clinical investigations [6)]	NVL-Greece	Unspecified	Official sampling	animal sample > organ/tissue		Animal	5	0			
Dogs - pet animals - at AI station - Clinical investigations [7)]	NVL-Greece	Unspecified	Official sampling	animal sample		Animal	1	0			
Other animals - at farm - Clinical investigations (pigs) [8)]	NVL-Greece	Unspecified	Official sampling	animal sample		Animal	5	0			
Other animals - at farm - Clinical investigations (rabbits) [9)]	NVL-Greece	Unspecified	Official sampling	animal sample > organ/tissue		Animal	1	0			
Other animals - at farm - Clinical investigations (snails) [10)]	NVL-Greece	Unspecified	Official sampling	animal sample > organ/tissue		Animal	1	0			

Table Salmonella in other animals

	Salmonella spp., unspecified
Cattle (bovine animals) - adult cattle over 2 years - at farm - Monitoring [1)]	
Sheep - at farm - Monitoring [2)]	
Goats - at farm - Monitoring [3)]	
Pigs - fattening pigs - at slaughterhouse - Monitoring [4)]	0
Solipeds, domestic - horses - at farm - Monitoring [5)]	1
All animals - farmed - at farm - Clinical investigations [6)]	
Dogs - pet animals - at AI station - Clinical investigations [7)]	
Other animals - at farm - Clinical investigations (pigs) [8)]	
Other animals - at farm - Clinical investigations (rabbits) [9)]	
Other animals - at farm - Clinical investigations (snails) [10)]	

Comments:

[1)] clinical cases

[2)] clinical cases

[3)] clinical cases

Table Salmonella in other animals

Comments:

[4)] clinical investigations

[5)] clinical investigations

[6)] clinical investigation, Pigs

[7)] clinical investigation

[8)] clinical cases

[9)] clinical cases

[10)] clinical cases

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes	100	PREFECTURAL VETERINARY DEPARTMENT (PVD)D	Census	Industry sampling	animal sample		yes	Flock	99	0	0
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes	131	PVD	Census	Industry sampling	animal sample		yes	Flock	130	1	0
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	583	PVD	Census	Official and industry sampling	animal sample		yes	Flock	578	22	3
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	7887	PVD	Census	Official and industry sampling	animal sample		yes	Flock	7810	32	10
Turkeys - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes	0	PVD									
Turkeys - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes	0	PVD									
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	3	PVD	Census	Official and industry sampling			yes	Flock	1	0	0
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	59	PVD	Census	Official and industry sampling	animal sample		yes	Flock	53	9	

Table Salmonella in other poultry

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Anatum	S. Bovismorbificans	S. Bredeney	S. Carno	S. Corvallis	S. Glostrup	S. Haardt	S. Hadar
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes	0	0	0								
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes	0	0	0								
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	0	0	3	0	2	0	1	0	1	1	1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	2	0	2	1		1		1			
Turkeys - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes											
Turkeys - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes											
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	0	0	0		0		0			
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes			6		1						

	S. Havana	S. Infantis	S. Istanbul	S. Livingstone	S. Mbandaka	S. Montevideo	S. Muenchen	S. Muenster	S. Newport	S. Senftenberg	S. Stanleyville
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes											

Table Salmonella in other poultry

	S. Havana	S. Infantis	S. Istanbul	S. Livingstone	S. Mbandaka	S. Montevideo	S. Muenchen	S. Muenster	S. Newport	S. Senftenberg	S. Stanleyville
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes	1										
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	1	1			1		1	1	1		1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	1	1	1	5		1		1		2	
Turkeys - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes											
Turkeys - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes											
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	0	0	0		0		0		0	
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes									2		

	S. Tennessee	S. Thompson	S. Umbilo	S. Virchow
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes				
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes				

Table Salmonella in other poultry

	S. Tennessee	S. Thompson	S. Umbilo	S. Virchow
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes		2	1	1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	1	2		
Turkeys - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes				
Turkeys - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes				
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	0		
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes				

Footnote:

one adult laying flock was positive in two serovars

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Compound feedingstuffs, not specified - unspecified - Monitoring	NVL-Greece	Census	Official sampling	feed sample		Single	25 gr	53	0		
Pet food - dog snacks (pig ears, chewing bones) - at processing plant - Survey	NRL-Greece	Census	Official sampling	feed sample		Single	25 gr	20	0		

	Salmonella spp., unspecified
Compound feedingstuffs, not specified - unspecified - Monitoring	
Pet food - dog snacks (pig ears, chewing bones) - at processing plant - Survey	

Footnote:

1.53 units conscerned other compound feedingstuffs
2. NVL= National Veterinary Lab
3.NRL= National Reference Lab

Table Salmonella in feed material of animal origin

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of land animal origin - meat meal - at feed mill - Surveillance	NRL-Greece	Census	Official sampling	feed sample		Batch	25 gr	5	0		
Feed material of land animal origin - meat and bone meal - at feed mill - Surveillance	NRL-Greece	Census	Official sampling	feed sample		Batch	25 gr	120	5		

	Salmonella spp., unspecified	S. Livingstone
Feed material of land animal origin - meat meal - at feed mill - Surveillance		
Feed material of land animal origin - meat and bone meal - at feed mill - Surveillance		5

Table Salmonella in other feed matter

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of cereal grain origin - maize derived - at feed mill - Surveillance	NRL-Greece	Census	Official sampling	feed sample		Batch	25 gr	10	0		

	Salmonella spp., unspecified
Feed material of cereal grain origin - maize derived - at feed mill - Surveillance	

2.1.6 Salmonella serovars and phagetype distribution

The methods of collecting, isolating and testing of the Salmonella isolates are described in the chapters above respectively for each animal species, foodstuffs and humans. The serotype and phagetype distributions can be used to investigate the sources of the Salmonella infections in humans. Findings of same serovars and phagetypes in human cases and in foodstuffs or animals may indicate that the food category or animal species in question serves as a source of human infections. However as information is not available from all potential sources of infections, conclusions have to be drawn with caution.

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		102		3		
Number of isolates serotyped	0	0	0	0	0	0	0	0	103	0	0	0	0
Number of isolates per serovar													
Other serovars									13				
S. Anatum									1				
S. Bispebjerg									1				
S. Bovismorbificans									3				
S. Bredeney									2				
S. Carno									1				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		102		3		
Number of isolates serotyped	0	0	0	0	0	0	0	0	103	0	0	0	0
Number of isolates per serovar													
S. Corvallis									1				
S. Enteritidis									25				
S. Gallinarum									1				
S. Gloucester									1				
S. Haardt									1				
S. Hadar									3				
S. Havana									3				
S. Idikan									3				
S. Infantis									6				
S. Istanbul									1				
S. Kentucky									2				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		102		3		
Number of isolates serotyped	0	0	0	0	0	0	0	0	103	0	0	0	0
Number of isolates per serovar													
S. Livingstone									6				
S. Mbandaka									2				
S. Montevideo									1				
S. Muenchen									1				
S. Muenster									2				
S. Newport									3				
S. Senftenberg									5				
S. Stanleyville									1				
S. Tennessee									1				
S. Thompson									5				
S. Typhimurium									7				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		102		3		
Number of isolates serotyped	0	0	0	0	0	0	0	0	103	0	0	0	0
Number of isolates per serovar													
S. Umbilo									1				

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
Other serovars			
S. Anatum			
S. Bispebjerg			
S. Bovismorbificans			
S. Bredeney			

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. Carno			
S. Corvallis			
S. Enteritidis			
S. Gallinarum			
S. Gloucester			
S. Haardt			
S. Hadar			
S. Havana			
S. Idikan			
S. Infantis			
S. Istanbul			

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. Kentucky			
S. Livingstone			
S. Mbandaka			
S. Montevideo			
S. Muenchen			
S. Muenster			
S. Newport			
S. Senftenberg			
S. Stanleyville			
S. Tennessee			
S. Thompson			

Table Salmonella serovars in animals

Serovar / Sources of isolates	Other poultry		
	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. Typhimurium			
S. Umbilo			

Footnote:

The following serovars are included in other serovars:1 S.enterica subsp. enterica 6,7:k:-,1 S.enterica subsp. enterica 4,5,12:-:-,8 S.enterica subsp. enterica 4,5,12:i:-,1 S.enterica subsp. salamae 4,12:i:-,1 S.enterica subsp. salamae 42:b:e,n,x,z15, 1

Table Salmonella serovars in food

Serovar / Sources of isolates	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin	
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Number of isolates in the laboratory			7		18					
Number of isolates serotyped	0	0	7	0	18	0	0	0	0	0
Number of isolates per serovar										
Other serovars			5		10					
S. Blockley					1					
S. Derby			2							
S. Enteritidis					1					
S. Haardt					2					
S. Hadar					4					

Footnote:

1.From 18 isolates from Gallus gallus 7 originate from official sampling and 11 from industrial sampling.
The 10 isolates indicated as "other serovars" include:1 S. Montevideo,3 S.enterica subsp. enterica 6,7:k:-,3 S.Thompson,1 S. Typhimurium,1 S.Muenster,1 S. enterica subsp. diarizonae 38:l,v:z35.

2.The 5 salmonella isolates in pigs indicated as "other serovars" include 5 S. Umbilo

2.1.7 Antimicrobial resistance in Salmonella isolates

A. Antimicrobial resistance in Salmonella in poultry

National evaluation of the recent situation, the trends and sources of infection

ANTIMICROBIAL RESISTANCE

No official national program is in force. Efforts commenced to develop a systematic reporting system of antimicrobial resistance in various animal species. The results are limited and the only available information is mainly provided from the National Reference Laboratory for Salmonella. Relevant reports for Antimicrobial susceptibility testing in Animals (for both quantative and qualitative data) have been increased year per year at national level, especially for Salmonella agents.

Additional information

The overall monitoring of antimicrobial resistance , especially for the Salmonella isolates in Poultry was carried out using two laboratory methods.
1. Performance Standards for Antmicrobial Disk Susceptibility Tests-Ninth Edition; Approved Standard January 2006 CLSI (M2-A9,Vol.26.No1 and Eighteenth Information Supplement CLSI (M100-S18, Vol.28 No 1)
2. Broth Microdilution Method (MIC)- Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that grow Aerobically; Approved Standard January 2009 CLSI (M07-A8, Vol. 29 No2) and Standard for breakpoint from EFSA suggestions.

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from broilers (Gallus gallus) - carcass - chilled - at slaughterhouse - Monitoring - Official sampling - food sample - neck skin - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Meat from broilers (Gallus gallus) - carcase - chilled - at slaughterhouse - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	1																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	1	0							1														0.25	32
Aminoglycosides - Streptomycin	32	1	0											1										2	128
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Amphenicols - Florfenicol		1	1									1												2	64
Cephalosporins - Cefotaxime	0.5	1	0					1																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.008	8
Penicillins - Ampicillin	4	1	0								1													0.5	32
Quinolones - Nalidixic acid	16	1	0										1											4	64
Sulfonamides	256	1	0																1					8	1024
Tetracyclines - Tetracycline	8	1	0								1													1	64
Trimethoprim	2	1	0							1														0.5	32

Table Antimicrobial susceptibility testing of Other serovars in Meat from broilers (Gallus gallus) - fresh - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Meat from broilers (Gallus gallus) - fresh																								
Isolates out of a monitoring program (yes/no)																									
Number of isolates available in the laboratory	9																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	9	1						1	6	1					1								0.25	32
Aminoglycosides - Streptomycin	32	9	1										1	7			1							2	128
Amphenicols - Chloramphenicol	16	9	0									8	1											2	64
Amphenicols - Florfenicol		9	9									8	1											2	64
Cephalosporins - Cefotaxime	0.5	9	0				8	1																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	9	0		3	6																		0.008	8
Penicillins - Ampicillin	4	9	1							2	6					1								0.5	32
Quinolones - Nalidixic acid	16	9	0										9											4	64
Sulfonamides	256	9	1															8			1			8	1024
Tetracyclines - Tetracycline	8	9	0								9													1	64
Trimethoprim	2	9	1							8						1								0.5	32

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from bovine animals and pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance - Unspecified - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Meat from bovine animals and pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	1	0							1														0.25	32
Aminoglycosides - Streptomycin	32	1	1														1							2	128
Amphenicols - Chloramphenicol	16	1	1														1							2	64
Amphenicols - Florfenicol		1	1													1								2	64
Cephalosporins - Cefotaxime	0.5	1	0					1																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	1	1						1															0.008	8
Penicillins - Ampicillin	4	1	1													1								0.5	32
Quinolones - Nalidixic acid	16	1	1														1							4	64
Sulfonamides	256	1	1																	1				8	1024
Tetracyclines - Tetracycline	8	1	1												1									1	64
Trimethoprim	2	1	0							1														0.5	32

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - broilers - before slaughter - at farm - Monitoring - Official sampling - animal sample - faeces - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Gallus gallus (fowl) - broilers - before slaughter - at farm - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	9																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	9	0						4	5														0.25	32
Aminoglycosides - Streptomycin	16	8	0									6	2											2	128
Amphenicols - Chloramphenicol	16	9	0									6	3											2	64
Amphenicols - Florfenicol	16	9	0									6	3											2	64
Cephalosporins - Cefotaxime	0.5	9	0				2	7																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	9	0			9																		0.08	8
Quinolones - Nalidixic acid	16	9	0										9											4	64
Sulfonamides	256	9	0															7	2					8	1024
Tetracyclines - Tetracycline	8	9	0								9													1	64
Trimethoprim	2	9	0							9														0.5	32

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - broilers - before slaughter - at farm - Monitoring - Official sampling - animal sample - faeces - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Gallus gallus (fowl) - broilers - before slaughter - at farm - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	3	0							3														0.25	32
Aminoglycosides - Streptomycin	16	3	0											3										2	128
Amphenicols - Chloramphenicol	16	3	0										3											2	64
Amphenicols - Florfenicol	16	3	0										3											2	64
Cephalosporins - Cefotaxime	0.5	3	1				1		1				1											0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	3	0			3																		0.08	8
Penicillins - Ampicillin	8	3	1								1	1				1								0.5	32
Quinolones - Nalidixic acid	16	3	0										3											4	64
Sulfonamides	256	3	2															1			2			8	1024
Tetracyclines - Tetracycline	8	3	1								2						1							1	64
Trimethoprim	2	3	0							3														0.5	32

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - broilers - before slaughter - at farm - Monitoring - Official sampling - animal sample - faeces - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Gallus gallus (fowl) - broilers - before slaughter - at farm - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	13																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	13	0						3	10														0.25	32
Aminoglycosides - Streptomycin	16	13	1									1	2	9			1							2	128
Amphenicols - Chloramphenicol	16	13	0									7	3	3										2	64
Amphenicols - Florfenicol		13	13									7	3	3										2	64
Cephalosporins - Cefotaxime	0.5	13	0				7	5	1															0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	13	6		3	3	1	4			2													0.008	8
Penicillins - Ampicillin	8	12	0							5	4	3												0.5	32
Quinolones - Nalidixic acid	16	13	3										9		1	1	2							4	64
Sulfonamides	256	13	0															9	4					8	1024
Tetracyclines - Tetracycline	8	12	0								9	3												1	64
Trimethoprim	2	13	0							12	1													0.5	32

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - Official sampling - animal sample - faeces - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	8																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	8	0						6	1	1													0.25	32
Aminoglycosides - Streptomycin	16	8	0									7	1											2	128
Amphenicols - Chloramphenicol	16	8	0									6	2											2	64
Amphenicols - Florfenicol		8	8									6	2											2	64
Cephalosporins - Cefotaxime	0.5	8	0				4	3	1															0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	8	2		5	1			2															0.008	8
Penicillins - Ampicillin	8	8	0								8													0.5	32
Quinolones - Nalidixic acid	16	8	2										6				2							4	64
Sulfonamides	256	8	0															2	6					8	1024
Tetracyclines - Tetracycline	8	8	0								8													1	64
Trimethoprim	2	8	0						2	6														0.5	32

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - Monitoring - Official sampling - animal sample - faeces - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	2	0							2														0.25	32
Aminoglycosides - Streptomycin	16	2	0											2										2	128
Amphenicols - Chloramphenicol	16	2	0									1	1											2	64
Amphenicols - Florfenicol		2	2									1	1											2	64
Cephalosporins - Cefotaxime	0.5	2	0				1	1																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.008	8
Penicillins - Ampicillin	8	2	0							1	1													0.5	32
Quinolones - Nalidixic acid	16	2	0										2											4	64
Sulfonamides	256	2	0								1							1						8	1024
Tetracyclines - Tetracycline	8	1	1														1							1	64
Trimethoprim	2	2	0							2														0.5	32

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - Monitoring - Official sampling - animal sample - faeces - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	8																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	8	0						5	3														0.25	32
Aminoglycosides - Streptomycin	16	8	1										5	2			1							2	128
Amphenicols - Chloramphenicol	16	8	0									3	5											2	64
Amphenicols - Florfenicol		8	8									3	5											2	64
Cephalosporins - Cefotaxime	0.5	8	0				6	2																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	8	2		4	2			2															0.008	8
Penicillins - Ampicillin	8	8	0							5	2	1													
Quinolones - Nalidixic acid	16	8	1										7				1							4	64
Sulfonamides	256	8	2															4	2	1	1			8	1024
Tetracyclines - Tetracycline	8	8	1								7					1								1	64
Trimethoprim	2	8	0							8														0.5	32

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - breeding flocks, unspecified - at hatchery - Monitoring - Official sampling - animal sample - eggshells - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Gallus gallus (fowl) - breeding flocks, unspecified - at hatchery - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	1	0							1														0.25	32
Aminoglycosides - Streptomycin	16	1	0											1										2	128
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Amphenicols - Florfenicol		1	1									1												2	64
Cephalosporins - Cefotaxime	0.5	1	0				1																	0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.008	8
Penicillins - Ampicillin	8	1	0								1													0.5	32
Quinolones - Nalidixic acid	16	1	0										1											4	64
Sulfonamides	256	1	0															1						8	1024
Tetracyclines - Tetracycline	8	1	0								1													1	64
Trimethoprim	2	1	0							1														0.5	32

Table Antimicrobial susceptibility testing of S. Infantis in Gallus gallus (fowl) - breeding flocks, unspecified - at farm - Monitoring - Official sampling - animal sample - eggshells - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Infantis	Gallus gallus (fowl) - breeding flocks, unspecified - at farm - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	2																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	2	0							2														0.25	32
Aminoglycosides - Streptomycin	16	2	0											2										2	128
Amphenicols - Chloramphenicol	16	2	0										2											2	64
Amphenicols - Florfenicol		2	2										2											2	64
Cephalosporins - Cefotaxime	0.5	2	0					2																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.008	8
Penicillins - Ampicillin	8	2	0								2													0.5	32
Quinolones - Nalidixic acid	16	2	0										2											4	64
Sulfonamides	256	2	0															1	1					8	1024
Tetracyclines - Tetracycline	8	2	0								2													1	64
Trimethoprim	2	2	0							1	1													0.5	32

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - breeding flocks, unspecified - at farm - Monitoring - Official sampling - animal sample - eggshells - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Gallus gallus (fowl) - breeding flocks, unspecified - at farm - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides - Gentamicin	2	2	0						1	1														0.25	32
Aminoglycosides - Streptomycin	16	2	0									2												2	128
Amphenicols - Chloramphenicol	16	2	0									1	1											2	64
Amphenicols - Florfenicol		2	2									1	1											2	64
Cephalosporins - Cefotaxime	0.5	2	0					2																0.06	4
Fluoroquinolones - Ciprofloxacin	0.06	2	1			1		1																0.008	8
Penicillins - Ampicillin	8	2	0							1	1													0.5	32
Quinolones - Nalidixic acid	16	2	0										2											4	64
Sulfonamides	256	2	0															1	1					8	1024
Tetracyclines - Tetracycline	8	2	0								2													1	64
Trimethoprim	2	2	0							2														0.5	32

Table Cut-off values for antibiotic resistance testing of Salmonella in Animals

Test Method Used	Standard methods used for testing
Broth dilution	

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	NON-EFSA	16	
Amphenicols	Chloramphenicol	EFSA	16	
Cephalosporins	Cefotaxime	EFSA	0.5	
Fluoroquinolones	Ciprofloxacin	EFSA	0.06	
Penicillins	Ampicillin	NON-EFSA	8	
Quinolones	Nalidixic acid	EFSA	16	
Sulfonamides	Sulfonamides	EFSA	256	
Tetracyclines	Tetracycline	EFSA	8	
Trimethoprim	Trimethoprim	EFSA	2	

Table Cut-off values for antibiotic resistance testing of Salmonella in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
Fluoroquinolones	Ciprofloxacin		0.06	
Penicillins	Ampicillin		4	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

Table Cut-off values for antibiotic resistance testing of Salmonella in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
Fluoroquinolones	Ciprofloxacin		0.06	
Penicillins	Ampicillin		4	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Thermophilic Campylobacter
TARGETS : Animals / Contaminated Food

Surveillance system- History
There is not yet in force an official systematic national Campylobacter control program for animals and food. Sporadic selective samples are collected and examined, especially from sheep (aborted fetus in the field) and broilers (at slaughterhouse).

Results of 2009 zoonoses monitoring

Animals: Cattle (n=20), Sheep (n=56) , Goats, Pigs, Horses (n=1) were officially tested and 11 animals (sheep) were found positive to Campylobacter fetus (animal sample: aborted fetus / stomach content).
Food : Targeted official sampling of fresh broiler meat at processing plant level revealed 33 positive samples out of 47 tested (Campylobacter spp- unspecified)

Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.2.2 Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Cambylobacteriosis
AFFECTED SPECIES: Human

Results of the investigations in the year 2006

In 2006 , 286 cases (incidence: 2,61 per 100.000 inhabitants) of campylobacteriosis in humans were reported . From the total number of Campylobacter cases, 23 human cases were identified as C. jejuni (223 Unknown).

2.2.3 Antimicrobial resistance in Campylobacter isolates

Table Cut-off values used for antimicrobial susceptibility testing of C. coli in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		16	
Tetracyclines	Tetracycline		2	

Table Cut-off values used for antimicrobial susceptibility testing of C. coli in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		16	
Tetracyclines	Tetracycline		2	

Table Cut-off values used for antimicrobial susceptibility testing of C. coli in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		16	
Tetracyclines	Tetracycline		2	

Table Cut-off values used for antimicrobial susceptibility testing of C. jejuni in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		4	
Tetracyclines	Tetracycline		2	

Table Cut-off values used for antimicrobial susceptibility testing of C. jejuni in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		4	
Tetracyclines	Tetracycline		2	

Table Cut-off values used for antimicrobial susceptibility testing of C. jejuni in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		4	
Tetracyclines	Tetracycline		2	

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

A. Listeriosis general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Listeriosis
AFFECTED SPECIES: Animals and Food

Surveillance system
Routine and targeted official sampling performed by the national veterinary public health authorities and the Hellenic Food Safety Authority (EFET) respecting the microbiological criteria foreseen by Community Legislation and Hygiene Package.

Method used
The laboratory methods used for Listeria detection and enumeration were : ISO 11290.01 Part 1 (1997), ISO 11290.01/A1 Amendment 1 (2005) and ISO 11290.02 /A1 Part 2 and Amendment 1 (2005) respectively.

Summary selected statistical results of 2011 zoonoses monitoring

Sample CategoriesPercentage % of positive samples among tested units for Listeria monocytogenes
Animals (sheep and Goats) 2,78
Other products0
Pig Meat 1,66%
Pig meat products cooked ready to eat 75%
Milk and dairy products0,34%

Data analysis are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

Summary Statistical Results

The overall 2011 reported and calculated percentage of Listeria positive findings (units) in all tested samples was 2,37% (19/800*100) for all food categories examined. This rate is slightly higher compared to the related percentage of positive samples for Listeria in 2010 (1,06 % (5/468*100), which was significantly lower compared to the related percertage of positive samples tested in 2009 and was attributed to Pig meat and products thereof contaminated with Listeria monocytogenes.

The overall 2009 reported and calculated percentage of Listeria positive findings (units) in all tested samples was 5,87 % (84/1432*100) for all food categories examined. This rate is significantly higher from the related percertage of positive samples tested in 2008 and was attributed to Pig meat and products thereof contaminated with Listeria monocytogenes.

The overall 2008 reported and calculated percentage of Listeria positive findings (units) in all tested samples was 1,53 %
(28/1826*100) for all food categories examined.

2.3.2 Listeriosis in humans

A. Listeriosis in humans

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Listeriosis
AFFECTED SPECIES: Humans

Surveillance system
Mandatory Notification of the disease within week (reporting time period following diagnosis)

Results of the monitoring in the year 2006
Seven (7) human cases (3 males and 4 females) were reported in 2006.

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample > milk		Single	25 ml	14	0	14	
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample > milk		Single	25 ml	8	0	8	
Milk, cows' - pasteurised milk - at processing plant - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample > milk		Single	25 ml	5	0	5	
Milk, sheep's - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample > milk		Single	25 ml	7	0	7	
Cheeses made from cows' milk - hard - made from pasteurised milk - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	10	0	10	
Cheeses made from cows' milk - hard - made from pasteurised milk - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	26	0	26	
Cheeses made from goats' milk - hard - made from pasteurised milk - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	28	0	28	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	304	0	304	

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	32	0	32	
Cheeses made from sheep's milk - hard - made from pasteurised milk - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	85	2	85	2
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single		5	0	5	0
Bakery products - at retail (cheesepie)	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	5	0	5	0
Dairy products (excluding cheeses) - at processing plant (yoghurt from sheep milk)	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	26	0	26	0
Dairy products (excluding cheeses) - dairy desserts - at retail (rise putting from sheep milk)	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	10	0	10	0
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail - Monitoring	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	8	0	8	0

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance			
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance			

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Milk, cows' - pasteurised milk - at processing plant - Surveillance			
Milk, sheep's - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance			
Cheeses made from cows' milk - hard - made from pasteurised milk - at processing plant - Surveillance			
Cheeses made from cows' milk - hard - made from pasteurised milk - at retail - Surveillance			
Cheeses made from goats' milk - hard - made from pasteurised milk - at processing plant - Surveillance			
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance			
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance			
Cheeses made from sheep's milk - hard - made from pasteurised milk - at processing plant - Surveillance			
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at retail - Surveillance			
Bakery products - at retail (cheesepie)			

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Dairy products (excluding cheeses) - at processing plant (yoghurt from sheep milk)			
Dairy products (excluding cheeses) - dairy desserts - at retail (rise putting from sheep milk)			
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail - Monitoring			

Table Listeria monocytogenes in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	5	0	5	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	20	15	20	15
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	NVL-Greece	Unspecified	Official sampling	food sample		Single	25 gr	34	0	34	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance	NVL-Greece	Unspecified	Official and industry sampling	food sample		Single	25 gr	15	0	15	0
Other processed food products and prepared dishes - sandwiches - at retail - Surveillance	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	7	0	7	0
Bakery products - at retail (Pie with vegetables)	NVL-Greecde	Objective sampling	Official sampling	food sample		Single	25 gr	2	0	2	0
Bakery products - at retail (cheese pie)	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	6	0	6	0
Fish - at retail	NVL-Greece	Objective sampling	Official sampling	food sample				6	0	6	0
Meat from bovine animals - fresh - at retail	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	10	0	10	0
Meat from pig - fresh - at retail	NVL-Greece	Objective sampling	Official sampling	food sample		Single	25 gr	120	2	120	2

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance			

Table Listeria monocytogenes in other foods

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance			
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance			
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance			
Other processed food products and prepared dishes - sandwiches - at retail - Surveillance			
Bakery products - at retail (Pie with vegetables)			
Bakery products - at retail (cheese pie)			
Fish - at retail			
Meat from bovine animals - fresh - at retail			
Meat from pig - fresh - at retail			

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified	L. innocua
Pigs - at farm - Monitoring [1)]	PVD-NVL	Suspect sampling	Official sampling	animal sample		Single	5	0			
Gallus gallus (fowl) - at farm - Monitoring [2)]	PVD-NVL	Suspect sampling	Official sampling	animal sample		Single	2	0			
Cattle (bovine animals) - at farm - Clinical investigations [3)]	PVD-NVL	Suspect sampling	Official sampling	animal sample		Single	1	0			
Cattle (bovine animals) - dairy cows - at farm - Clinical investigations	PVD-NVL	Suspect sampling	Official sampling	animal sample		Single	3	0			
Goats - at farm - Clinical investigations	PVD-NVL	Suspect sampling	Official sampling	animal sample		Single	44	2	2		
Other animals - at farm - Clinical investigations (rabbit)	PVD-NVL	Suspect sampling	Official sampling	animal sample		Single	1	0			
Other ruminants - farmed - at farm - Clinical investigations (SHEEP)	PVD-NVL	Suspect sampling	Official sampling	animal sample		Single	64	1			1

Comments:

[1)] Clinical cases

[2)] Clinical cases

[3)] Clinical cases

Footnote:

PVD: Prefecture Veterinary Departments, NVL: National Veterinary Labs
Methods : International Standards ISO 11290.01 /1996 /AM1 2004

Table Listeria in animals

Methods : International Standards ISO 11290.02 /1998 /AM1 2004
Half Fraser Broth- Fraser broth-Listeria agar Oxford -ALOA
Sample Type: Brain (Head) - internal organs

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Verocytotoxic E.coli
AFFECTED SPECIES: Animals / Food

Surveillance system
There is no official National monitoring program in force for detecting VTEC serovars in animals and food.

Results of investigations in the year 2011
Only severar animal and food samples were tested for E.coli spp in 2011

2.4.2 E. coli infections in humans

A. Verotoxigenic Escherichia coli infections in humans

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Verocytotoxic E.Coli
AFFECTED SPECIES: Human

Surveillance system
Mandatory Notification of the disease within 24 hours (reporting time period following diagnosis)

Results of zoonoses monitoring
No cases of VTEC in humans were reported for the year 2006

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

A. Tuberculosis general evaluation

History of the disease and/or infection in the country

Susceptible population (overall Bovine population size estimate)
706.696 animals raised in 30.835 holdings.

Surveillance system
National Eradication program for bovine tuberculosis.

Method used
Registration and identification of all bovines.
Tuberculin testing of all bovines over the age of 6 weeks.

Case definition
Infected animal: Animal positive to tuberculin testing.
Infected herd: Herd with one or more animals positive to tuberculin testing

Vaccination policy
Vaccination is not permitted.

Measures in case of positive findings
Slaughter of positive animals.
Ban of animal movement from and within the infected herd
Re-examination of the herd and re-establishment of the “tuberculosis free” health status.

National evaluation of the recent situation, the trends and sources of infection

Epidemiological overview, history and technical evaluation
Variations have been recorded on the evolution of bovine Tuberculosis compared to the previous year (2010) as the herd prevalence increased from to 2.70 % (2010) to 3,45 this year (2011). The herd incidence rate similarly increased from 0,84 % (2009) to 1.05% (2010) and to 1,12 (2011). The 2011 animal reported prevalence (1,07%) was lower compared to the previous year 2010 (1.27%). In general, the epidemiological indicators are influenced by the number of herds and animals tested in areas with high infection rates.

Concerning the overall infection status in the framework of the eradication programme, 176 positive herds with 2.289 animals were reported at the end of the reporting year 2011. However, following epidemiological data analysis at country level, 14.295 herds reported officially free, 4.767 herds reported with suspended health status and 3938 herds reported as herds of unknown health status.

The significant number of herds with unknown health status is mainly due to the livestock structure of nomos of Etoloakarnania. This area has a significant number of bovine herds with semi-wild animals of no tuberculosis history that were previously categorized as officially free and from the year 2003 were

characterized as herds of unknown health status due to the difficult access in applying animal health programmes at local level.

In general, the epidemiological impact of M. bovis situation in 2011 remained steady in endemic areas with observed variations in prevalence and incidence rates in comparison with previous years epidemiological figures. In general, Bovine Tuberculosis infection remains a significant animal health problem in several areas of Greece with endemic characteristics, especially in previous infected herds with adult animals. In addition Control and eradication measures for old and new infected herds should be a major continuous task for the veterinary services at regional and local level. In conclusion, further attempts and actions for investigating the epidemiology of the disease, identifying the source of infection, control the animal movements, tracing the infected farms after identifying TB lesions at slaughterhouse and properly implementing the program respecting the appropriate timetable between the checks will be followed in order to meet the eradication targets of Bovine Tuberculosis for the coming implementation years.

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

Relevance as zoonotic disease:
In general, bovine Tuberculosis infection remains a significant animal health problem in several areas of Greece.

Additional information

Summary results of the zoonoses monitoring for the year 2011

- Number of herds under the programme (official controls): 24.204
- Number of animals under the programme (official controls): 653.550
- Number of herds tested by tuberculin test: 5.098
- Number of herds positive: 176
- Number of new herds positive : 57
- Number of animals tested by tuberculin test: 181.003
- Number of animals as positive TB reactors: 2.289
- Total number of animals slaughtered under the programme: 3.058

2.5.2 Tuberculosis, mycobacterial diseases in humans

A. Tuberculosis due to Mycobacterium bovis in humans

Additional information

DISEASE/AGENT: Tuberculosis (Mycobacterium tuberculosis)
SUSCEPTIBLE SPECIES: Humans

Susceptible population
10.934.097 (National Census, 2001)

Surveillance system
Mandatory reporting and notification policy
Epidemiological surveillance

Methods used
Clinical symptoms, X -ray diagnosis and microbiological confirmation.

Epidemiological history and evaluation
The prevalent causal agent of Human Tuberculosis in Greece is M.Tuberculosis. A decreasing trend of reported cases has been observed during the year 2000 (93) compared to 1999 (186) and 1998 (990) respectively. In 2001 the number of TB reported cases (576 cases) significantly increased compared to the cases of 2000 (93 cases). No human cases of Bovine Tuberculosis (M. bovis) have been reported to the public Health services during 2004 in Greece. In the year 2004, the year of Olympic games in Greece, a significant increase of Human Tuberculosis cases (713 cases due to M. Tuberculosis) was recorded via the national epidemiological surveillance system which was rapid, well â€“ functioned end effective in detecting new cases. Immigration is considered an important risk factor for the TB re-emerge. During the year 2005 , an incidence rate of 1,62 per 100.000 inhabitants was reported . In addition, reactivation of previous TB cases was observed in 2005 (71 cases).

Results for the year 2006
Epidemiologic and Statistical TB Human Data for the year 2006 are available in central and regional public health authorities supervised by the Hellenic Disease Center for Control and Prevention under the Ministry of Health.

Results of the investigations in the year 2005
Based on reports from the Ministry of Health (Source: Hellenic center of infectious diseases and control) , 748 cases of Human tuberculosis were recorded for the year 20045 Relative information and Data are shown in relevant Tables of EFSA zoonoses monitoring electronic system.

Source of human infection
Human contact.

Relevance as zoonotic disease
Human Tuberculosis is a disease of high public concern and significance. The Continuous evaluation of the TB trends in Humans and animals will improve the disease management and intervention at national level. Inter- sector collaboration between Veterinary and Health services should be encouraged in the

field of disease epidemiology for each reported TB case in Humans and animals.

2.5.3 Mycobacterium in animals

Table Bovine tuberculosis - data on herds - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Ελλαδα	30835	24204	5098	176	57	7	3.98	21.06	3.45	1.12
Total : [1)]	30835	24204	5098	176	57	7	3.98	21.06	3.45	1.12

Comments:

[1)] N.A.

Footnote:

The Bovine Tuberculosis eradication programme has not been co-financed for 2011. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

Table Bovine tuberculosis - data on animals - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Ελλαδα	706696	653550	214158	181003	2289	2247	3058	32.77	1.07
Total : [1)]	706696	653550	214158	181003	2289	2247	3058	32.77	1.07

Comments:

[1)] N.A.

Footnote:

The Bovine Tuberculosis eradication programme has not been co-financed for 2011. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

Table Bovine tuberculosis - data on status of herds at the end of the period - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	24204	653550	3938	100878	136	12813	1068	23529	4767	98361			14295	417969
Total : [1)]	24204	653550	3938	100878	136	12813	1068	23529	4767	98361	0	0	14295	417969

Comments:

[1)] N.A.

2.6 BRUCELLOSIS

2.6.1 General evaluation of the national situation

A. Brucellosis general evaluation

History of the disease and/or infection in the country

DISEASE: Bovine Brucellosis
AFFECTED SPECIES: Animals, Bovines

Susceptible population
726.221 animals raised in 38.486 holdings

Surveillance system
National Eradication program for bovine brucellosis.

Method used
Registration and identification of all bovines
Serological tests (Rose Bengal and Complement Fixation Test according the Dir. 64/432 as well as Elisa in milk and serum and Serum Agglutination Test) of all bovines over the age of 12 months.
Laboratory examination of reported abortions.

Case definition
Infected animal: Animal positive to serological tests.
Infected herd: Herd with one or more animals positive to serological tests.

Vaccination policy
Vaccination is not permitted.

Measures in case of positive findings
Slaughter of positive animals.
Ban of animal movement from and into the infected herd.
Reexamination of the herd and restoration of the “brucellosis free” health status.

National evaluation of the recent situation, the trends and sources of infection

Data analysis
Tables on data for herds and animals investigated during the year 2011 were reported to Commission and EFSA web- based data system alongside the tabulated values of the herd health status according to the epidemiological situation at the end of the year 2011 in the whole country.

From 19.786 reported herds at central level under the program, 5.260 herds were tested and 264 herds were found infected (period herd prevalence: 5,02%). From the positive herds, 85 were new cases (incidence: 1,62%). Among 386.867 animals under the program, 220.170 were tested (73.667 tested individually) and 1.885 disease-positive reactors were recorded.

Concerning the epidemiological situation at the end of the year, 182 herds were classified as infected

herds, 4.459 herds have never been investigated and remained in the unknown health status, 490 herds tested negative and 11.892 herds were reported as officially free. Additionally, in 2.638 herds the health status has been suspended, mainly because the routine serology testing in Blood serum or bulk milk has not been performed during the required by the programme intervals.

Further epidemiological investigation of positive herds is necessary to be done as reactors originated from officially free herds based on Reports from Regional and local veterinary authorities.

Technical evaluation.
Observed variations have been recorded on the evolution of bovine Brucellosis for the year 2011. The 2011 period prevalence rate reported slighter higher (5,02%) compared to the previous year 2010 ((4,62%)). The estimated herd incidence rate decreased from 2% (2010) to 1,62% (2011). The 2011 animal prevalence (0,86%) reported lower in comparison with the previous year 2010 (1,28%). In general, the epidemiological indicators are influenced by the number of herds and animals tested in areas of high infection rate of Bovine Brucellosis.

Although the epidemiological situation in 2011 has not significantly improved compared to 2010, Bovine Brucellosis infection still remains a significant animal health problem in several areas of Greece with endemic characteristics, especially in previous infected herds or herds not periodically tested according to the programme requirements. In addition, strict Control and eradication measures for old and new infected herds should be a major task and priority for the veterinary services at regional and local level. In conclusion, further attempts and actions for investigating the epidemiology of the disease, identifying the source of infection and properly implementing the national program shall be urgently undertaken in order to meet the disease eradication targets for the next years.

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

Relevance as zoonotic disease
In general, bovine Brucellosis infection remains a significant animal health problem in several areas of Greece. The systematic implementation of bovine brucellosis eradication program is associated with the public health relevance of this zoonotic disease.

Recent actions taken to control the zoonoses

RB-51 Vaccination programme in Thessaloniki prefecture
As an additional preventive measure in order to rapidly reduce the prevalence of Bovine Brucellosis, a vaccination policy using the RB-51 vaccine (Brucella abortus strain) was implemented in the specific high risk area (Thessaloniki) in order to facilitate the progress of the existing Brucellosis eradication programme in Bovine Herds (dairy herds) which is in force and works concurrently with the vaccination strategy. During 2011, 126 Bovine herds (12.231 animals) reported vaccinated.

Suggestions to the Community for the actions to be taken

Source of human infection- Causal association.
The presence of B. abortus in animals compared to Brucella melitensis in small ruminants, has a lesser public health impact in Humans based on the epidemiology and official records from public health services.

Additional information

Summary Epidemiological and Statistical Data on the evolution of 2011 Bovine Brucellosis Programme are presented in the Reporting Tables of EFSA web-based zoonoses system.

Summary results of the zoonoses monitoring in the year 2011

- Number of herds under the programme (official control): 19.786
- Number of animals under the programme (official control): 386.867
- Number of herds tested: 5.260
- Number of herds positive: 264
- Number of new herds positive: 85
- Number of animals tested: 220.170
- Number of animals tested individually: 73.667
- Number of animals positive: 1.885
- Total number of animals slaughtered: 7.104

2.6.2 Brucellosis in humans

A. Brucellosis in humans

Results of the investigation

Results of the 2006 zoonoses monitoring period.
A total of 284 human Brucellosis cases were reported to the competent authorities (incidence per 100.000 persons = 2,59). The reported cases were classified as autochone (n=186), Imported (n=33) and unknown (n=65) cases respectively. The 2006 annual incidence rate reported lower compared to 2005 for Brucellosis in humans.

Results of the 2005 zoonoses monitoring period.

A total of 331 human Brucellosis cases were reported to the competent authorities (incidence per 100.000 persons = 3,02). All the reported cases were classified as autochone cases. Among the overall Brucella prevalence, 7 human cases were B. abortus , 16 B. melitensis, and 172 occupational respectively. The remaining Brucella spp cases , although have not been confirmed and typed, are considered to be B . melitensis due to epidemiological outcome and history of the disease occurrence.

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Brucellosis
SUSCEPTIBLE SPECIES: Humans

Susceptible population
10.934.097 (National Census ,2001)

Surveillance system
Mandatory reporting and notification policy
Epidemiological surveillance

Methods used
Clinical symptoms, serology,culture and microbiological confirmation.

Epidemiological history and evaluation
The continuous implementation of the control and eradication programmes in animals, especially in sheep and goats appears to have a successful impact on decreasing Human Brucellosis cases in Greece over time. In addition the widespread pasteurization, obligatory by law of milk and milk products has scientifically reduced the Human Brucellosis incidence.

For the year 1996 the reported cases were 451, slightly increased compared to those of 1998 (419 cases). For the years 1999 â€“ 2003 the reported human cases were 451, 334, 379 , 327 and 255 respectively.

Relevance as zoonotic disease

Relevance as zoonotic disease

The relevance and public health significance of B. melitensis as the main causative zoonotic agent remains very high in humans.

Source of human infection

Animal contact and consumption of dairy un- pasteurized products are mainly the source of human infection.

2.6.3 Brucella in animals

A. Brucella abortus in bovine animals

Vaccination policy

RB-51 Vaccination programme in Thessaloniki prefecture
As an additional preventive measure in order to rapidly reduce the Bovine Brucellosis Prevalence, a vaccination policy using the RB-51 vaccine (Brucella abortus strain) was implemented in the specific high risk area (Thessalonika) in order to facilitate the progress of the existing Brucellosis eradication programme in Bovine Herds (dairy herds) which is in force and works simultaneously with the vaccination strategy.
The evolution of the 2005 vaccination programme is presented in the table below :
TABLE 1

HERDS UNDER THE PROGRAM800
ANIMALS UNDER THE PROGRAM42.445
VACCINATED HERDS 141
ANIMALS IN VACCINATED HERDS10.295
VACCINATED ANIMALS8.203
CUMULATIVE HERD COVERAGE AT THE END OF THE YEAR 200542%
ANIMAL COVERAGE IN VACCINATED HERDS80 %
CUMULATIVE ANIMAL VACCINATION COVERAGE AT THE END OF THE YEAR 200545%

B. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

The entire country free

Non officially free Country

Additional information

Total Susceptible population (Data 2011 / Directorate of Animal Health , MRDF)
15947917 sheep and Goats raised in 125.599 Flocks.

Surveillance system
The control program for ovine and caprine brucellosis is in force in the mainland (includes mass vaccination policy in young and adult sheep and goat population) and Brucellosis eradication program runs in islands.

Method used
Registration and identification systems applied in animals.
Serological test (test and slaughter policy) in animals raising in the islands.
Animal mass vaccination in the mainland.

Case definition
Infected animal: Animal positive to serological tests.
Infected Flock: Flock with one or more animals positive .

Vaccination policy
Vaccination according to the control program.

Measures in case of positive findings (according to the eradication program)
Slaughter of positive animals.
Ban of animal movement from and to the infected herd.
Re-examination of the herd and re establishment of the “brucellosis free” health status.

Vaccination policy

SEMI-WILD BOVINE VACCINATION WITH REV 1 VACCINE

As an additional preventive measure under the existing control and eradication brucellosis programme for sheep and goats, the free-ranged (semi-wild) bovines that are sharing common pastures with small ruminants, were vaccinated with REV-1 vaccine in order to reduce the spread of Brucella infection in the field.

Number of Bovine herds vaccinated with REV-1 vaccine: 777
Number of Bovine animals vaccinated with REV-1 : 9.363

Control program/mechanisms

The control program/strategies in place

EPIDEMIOLOGICAL SITUATION IN THE ISLANDS – DATA ANALYSIS

In the islands (eradication zone), except Evia, Lesvos and Leros, the 2011 flock incidence and prevalence rates among tested sheep and goats flocks were reported 0,58 % and 5,38 % respectively. The animal prevalence reported 0,31 % in 2011 . The islands of Lesvos and Leros have been excluded from the eradication policy and belong to the mainland vaccination programme status.

The 2011 Brucella Melitensis flock prevalence and incidence rates within eradication zone are mainly influenced (not representative from all the regions of the eradication zone with low herd coverage and no positive results) by the positive reactors reported from the regions Lasithi , Rethymno, Hraklio and Dodekanissa where the programme is carried out.

Summary results of the zoonoses monitoring in the year 2011 from the eradication zone

•Number of flocks under the programme (official control): 25.922
•Number of animals under the programme (official control): 4.208.986
•Number of flocks tested: 1209
•Number of flocks positive: 65
•Number of new flocks positive: 7
•Number of animals tested individually: 113.494
•Number of animals positive: 382
•Total number of animals slaughtered: 612

Notification system in place

Mandatory notification status.

Results of the investigation

EPIDEMIOLOGICAL SITUATION IN THE MAINLAND – DATA ANALYSIS

Summary results of the official mass vaccination 2011 programme in sheep and goats:

Mass vaccination carried out in the Mainland. During 2011, based on vaccination records and reports from the Regional Veterinary Directorates (at Prefecture level) , 912.790 sheep and goats from 23.080 flocks were vaccinated with the vaccine REV 1 . Further analysis and detailed statistics (flock and animal vaccination data, follow –up and up to date vaccination activities) are available through the central data base files of the Department of Zoonoses (Animal Health Directorate).

Number of flocks vaccinated: 23.080
Number of animals vaccinated : 912.790

National evaluation of the recent situation, the trends and sources of infection

Epidemiological and Technical evaluation

The Ovine and Caprine Brucellosis control and eradication programme has been implemented in the mainland and islands of Greece in 2011. The 2011 B.melitensis programme was carried out with co-financing status by the E.U based on the Commission Decision 2008/897/EC. Greek Farmers obtained

compensation for positive-infected sheep and goats based on the requirements and provisions of the National Ministerial Decision 713/2009. The Country is divided in 13 prefectures - Peripheries. For the implementation of brucellosis control and eradication programme, Greece is divided in two programme zones in which different policies and measures are applied, the control strategy in the mainland (mass vaccination of young and adult female small ruminants) and the eradication policy in the islands which is based on test and slaughter of positive reactors receptively.

Relevance of the findings in animals to findings in foodstuffs and to human cases (as a source of infection)

Relevance as zoonotic disease

The relevance of the disease has a significant impact at Public Health level for the Community and consumers.

Source of human infection

Mainly from animal contact and consumption of dairy products (especially consumption of dairy products derived from non heated and pasteurized milk or immature types of sheep and goat cheese). In addition, it should be acknowledged the possible risk of obtaining the disease, if various home- made dairy products of unknown origin and hygiene quality are eaten by the consumers.

Additional information

Epidemiological history

Ovine and caprine brucellosis due to B. melitensis is a significant disease for both public health and animal production in Greece. During the last years a control and eradication program is running by the veterinary services of the Ministry of Rural Development and Food. The aim of the program is to control the incidence and prevalence of the disease in areas of the country where these estimates are reported high, by vaccination of lambs and kids. At the same time, in the remaining parts of the country, where the prevalence of the disease is reported low among sheep and goat flocks, an eradication program is implemented by test and slaughter policy.

Source of human infection

Mainly from animal contact and consumption of dairy products of unknown origin and hygiene quality. (Especially, consumption of dairy products prepared from non pasteurized milk or immature types of sheep and goat cheese).

Table Bovine brucellosis - data on herds - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Ελλαδα	30835	19786	5260	264	85	8	3.03	26.58	5.02	1.62
Total : [1)]	30835	19786	5260	264	85	8	3.03	26.58	5.02	1.62

Comments:

[1)] N.A.

Footnote:

The Bovine Brucellosis eradication programme has not been co-financed for 2011. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past B.B programmes were co- financed by the EU.

Table Ovine or Caprine brucellosis - data on herds - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Ελλαδα	26097	25922	1209	65	7	4	6.15	4.66	5.38	.58
Total : [1)]	26097	25922	1209	65	7	4	6.15	4.66	5.38	.58

Comments:

[1)] N.A.

Footnote:

Footnote
The ovine and caprine B, Melitansis eradication programme covers only the islands of Greece. For The remaining country regions , the mainland, a mass vaccination programme was carried out in 2011 with co-financing by the EU. Programme implementation, Data collection and presentation are in acordance with all the EU requirements.

Table Bovine brucellosis - data on animals - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Ελλαδα	706696	38867	220170	73667	1885	1706	7104	566.47	.86
Total : [1)]	706696	38867	220170	73667	1885	1706	7104	566.47	.86

Comments:

[1)] N.A.

Footnote:

The Bovine Brucellosis eradication programme has not been co-financed for 2011. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past B.B programmes were co- financed by the EU.

Table Ovine or Caprine brucellosis - data on animals - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Ελλαδα	4221861	4208986	121574	113494	382	371	612	2.89	.31
Total : [1)]	4221861	4208986	121574	113494	382	371	612	2.89	.31

Comments:

[1)] N.A.

Footnote:

The ovine and caprine B, Melitansis eradication programme covers only the islands of Greece. For The remaining country regions , the mainland, a mass vaccination programme was carried out in 2011 with co-financing by the EU. Data collection and presentation are in acordance with all the EU requirements.

Table Bovine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	19786	386867	4459	50229	182	13701	490	11315	2638	40458	126	12231	11892	259034
Total : [1)]	19786	386867	4459	50229	182	13701	490	11315	2638	40458	126	12231	11892	259034

Comments:

[1)] N.A.

Table Ovine or Caprine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	25922	4208986	14809	3182714	63	16089	2315	331882	1685	205962			7050	472339
Total : [1)]	25922	4208986	14809	3182714	63	16089	2315	331882	1685	205962	0	0	7050	472339

Comments:

[1)] N.A.

Footnote:

The ovine and caprine B, Melitansis eradication programme covers only the islands of Greece. For The remaining country regions , the mainland, a mass vaccination programme was carried out in 2011 with co-financing by the EU. Programme implementation, Data collection and presentation are in acordance with all the EU requirements.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Yersiniosis
AFFECTED SPECIES: Animals and Food

No Data were available at central authority level for animal and Food in 2011

2.7.2 Yersiniosis in humans

A. Yersinosis in humans

National evaluation of the recent situation, the trends and sources of infection

Twenty two (22) cases of Human Yersiniosis were reported in total. The predominant causal agent was Y. enterocolitica (21 cases).

Humans: Data 2006
Y. enterocolitica : 22 cases (incidence: 0,2 per 100.000 inhabitants), Unknown : 1 case

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

A. Trichinellosis general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Trichinellosis , Trichinella spp.
AFFECTED SPECIES: Animals

Susceptible population
All domestic farmed and wild swine eligible for slaughter.

Surveillance system
Compulsory examination for detection of Trichinellosis at Slaughterhouse level.

Method used
Two main diagnostic methods for Trichinella spp in fresh pork meat are used. The first comprises the digestion in artificial gastric juice of muscle tissues from Trichinella pre- determined sites, followed by the microscopic examination of parasitic larvae. The second commonly used in the past covers the examination of tissues from diaphragm in the trichinoscope. New Community legislation (Commission Regulation 2075/2005) which has been adopted by the EU describes diagnostics techniques and sampling methods for target species (swine) expected to be fully implemented on mandatory basis by the national monitoring Trichinella systems in all Member- States.

Epidemiological history

13 positive findings (Trichinella spp. Unspecified) were reported at slaughterhouse level under the meat inspections activities in 2011. The positive samples derived from meat of wild farmed boars raised in Northern Greece. The positive units were sent to Community Reference Laboratory for further diagnostics and parasitic identification.
During the reporting year 2011, 1.217.530 pigs were tested for trichinella spp at slaughterhouse level. The targeted animals were examined by the new official reference method of Trichinella detection as forseen and described in the Annex 1 of the Commission Regulation 2075/2005 (Magnetic stirrer method for pooled sample digestion).

Results of monitoring
13 positive wild farmed boars were found in the framework of zoonosis monitoring. The causative agent was Trichinella spp- unspecified.

Data are presented in the relevant table of EFSA web based electronic system for zoonoses monitoring.

2.8.2 Trichinellosis in humans

A. Trichinellosis in humans

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Trichinellosis
AFFECTED SPECIES: Human

Results of the investigations in the year 2006
No cases of human trichinellosis were reported during the year 2006.

2.8.3 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs - fattening pigs	slaughterhouse	Census	Official sampling	animal sample > organ/tissue		Animal	1189691	0		
Pigs - fattening pigs - raised under controlled housing conditions - at slaughterhouse - Surveillance	slaughterhouse	Census	Official sampling	animal sample > organ/tissue		Animal	1184217	0		
Pigs - fattening pigs - not raised under controlled housing conditions - at slaughterhouse - Surveillance	slaughterhouse	Census	Official sampling	animal sample > organ/tissue		Animal	5474	0		
Pigs - breeding animals	slaughterhouse	Census	Official sampling	animal sample > organ/tissue		Animal	25427	0		
Pigs - breeding animals - raised under controlled housing conditions - sows and boars - at slaughterhouse - Surveillance	slaughterhouse	Census	Official sampling	animal sample > organ/tissue		Animal	25427	0		
Wild boars - wild - Surveillance	slaughterhouse	Census	Official sampling	animal sample > organ/tissue		Animal	12	0		0
Pigs - fattening pigs - not raised under controlled housing conditions - at slaughterhouse (free ranging pigs)	slaughterhouse	Census	Official sampling	animal sample		Animal	3383	13		13
Pigs - fattening pigs - raised under controlled housing conditions - Monitoring (in intergrated system)	NVL-Greece	Census	Official sampling	animal sample > organ/tissue		Animal	2412	0		

Table Trichinella in animals

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

A. Echinococcus spp. general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Echinococcosis
AFFECTED SPECIES: Susceptible Animals: Cattle, sheep, Goats, Pigs.

Susceptible population
All animals eligible for slaughter at country level.

Surveillance system
Inspection of all carcasses at slaughterhouse level.
Preventive treatment of all domestic and farm dogs with antiparasitic tablets.

Method used
For farmed animals , meat inspection of carcasses at slaughterhouses. For dogs the arecolin test applied in the past.

Epidemiological history
The infection among the owned dogs has been almost disappeared due to systematic preventive treatment of animals with antiparasitic medication. The infection rate in stray dogs is difficult to be estimated. The overall infection in farmed animals remained stable compared to previous reporting years.

Results of 2011 zoonoses monitoring

Animal species Prevelance (%) at slaughterhouse level
Sheep1,23%
Goats0,39%
Bovine0,71%
Pigs 0%
Results of 2009 zoonoses monitoring

Animal species Prevelance (%) at slaughterhouse level
Sheep1,85
Goats0,46
Bovines1.01
Pigs 0,00

Data analysis are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

Source of human infection
Mainly through the consumption of contaminated raw foodstuffs (i.e vegetables).

2.9.2 Echinococcosis in humans

A. Echinococcus spp. in humans

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Echinococcosis
AFFECTED SPECIES: Human

Surveillance system
Clinical cases referred to the competent authority.
Mandatory Notification of the disease within week (reporting time period following diagnosis).

Method used
X-ray, echo and serological tests.

Epidemiological history
A slight decrease in the number of clinical cases for the year 1999 comparing to the year 1998 was noticed. 99 autochthon cases and 6 imported were notified for the year 1999. For the 2000 ,2001, 2002, 2003 and 2004 years, 20,37,5,17 and 17 human cases were reported respectively.

Results of the investigations in the year 2006
Six (6) human cases (1 male and 6 females) were reported to the competent authorities of the Ministry of Health for the year 2006.

Source of human infection
Mainly consumption of infected food (i.e vegetables) and animal contact in conjunction with poor sanitary and hygiene conditions in rural areas.

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis
Cattle (bovine animals) - at slaughterhouse - Surveillance	at slaughterhouse	Census	Official sampling	animal sample		Animal	Ελλαδα	152008	1083		
Sheep - at slaughterhouse - Surveillance	at slaughterhouse	Census	Official sampling	animal sample		Animal	Ελλαδα	1261178	15520		
Goats - at slaughterhouse - Surveillance	at slaughterhouse	Census	Official sampling	animal sample		Animal	Ελλαδα	482740	1905		
Pigs - at slaughterhouse - Surveillance	at slaughterhouse	Census	Official sampling	animal sample		Animal	Ελλαδα	661634	0		

	Echinococcus spp., unspecified
Cattle (bovine animals) - at slaughterhouse - Surveillance	1083
Sheep - at slaughterhouse - Surveillance	15520
Goats - at slaughterhouse - Surveillance	1905
Pigs - at slaughterhouse - Surveillance	0

Table Echinococcus in animals

2.10 TOXOPLASMOSIS

2.10.1 General evaluation of the national situation

A. Toxoplasmosis general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Toxoplasmosis
AFFECTED SPECIES: Animals
In 2011, 363 blood sera samples were sent to the appropriate laboratory (181 goats and 182 sheep) in the frame of investigating abortions. The tests were not performed due to lack of reagents and therefore only suspected toxoplasmosis can be based on the clinical picture.

Toxoplasma gondii is detected in Sheep and Goats tested under national Surveys. The laboratory methods used for 2011 was the IFAT (Indirect Immunofluorescence Antibody test) for detecting Toxoplasma antibodies in blood sera and microscopic examination of the brain of aborted fetuses. The sampling schemes were not random or representative, originated from sheep and goats flocks with reported abortions under clinical investigation practices.
Results of 2011 monitoring
Data are available in the relevant tables of EFSA web based electronic system for zoonoses monitoring.
There are no available data on toxoplasmosis for 2011.

2.10.2 Toxoplasmosis in humans

A. Toxoplasmosis in humans

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Toxoplasmosis
AFFECTED SPECIES: Human

No human cases of Congenital toxoplasmosis were reported in 2006.

2.11 RABIES

2.11.1 General evaluation of the national situation

A. Rabies general evaluation

History of the disease and/or infection in the country

Since 1987 Greece is free from rabbies. A monitoring programme was is place according to Directive 2003/99.
This programme included testing of the brain of dead wild and domestic animals. Since beginning of 2012 the above mentioned programme was intensified because of current epidemiological situation of rabbies in neigbouring Balkanian countries.

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Rabies
AFFECTED SPECIES: Animals

Surveillance system
Monitoring activities covering the whole country are in force.

Vaccination policy
Dog vaccination is highly recommended and applied at National level.

Epidemiological history
No cases of human or animal rabies were reported. Greece is a Rabies- free country.
The disease in humans is notifiable through mandatory system.. Last case in humans was recorded in 1970. In animals 2 cases (a fox/1974 and a domestic dog /1987) were additionally reported. Rabies vaccine included into the standard vaccination protocols for dogs and cats respectively. However, the disease is present in neighbouring countries. Although rabies is a very rare disease in the EU, a risk of re-emerge does exist, especially through the cross- border movements of potentially rabid animals.

The disease is notifiable following a clinical suspicion in all-animal species. In the framework of National sporadic surveys, samples, especially brain from dead targeted animals and wildlife species are submitted to the National Reference laboratory (Athens – Greece) for further rabies diagnostic examinations.

Results of 2010 zoonoses monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.11.2 Lyssavirus (rabies) in animals

A. Rabies in dogs

Vaccination policy

All dogs over three months of age are mandatory vaccinated against rabies.

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Cattle (bovine animals)							Ελλαδα				
Dogs - stray dogs		Suspect sampling	Official sampling	animal sample > brain		Animal	Ελλαδα	6	0		
Cats - stray cats		Suspect sampling	Official sampling	animal sample > brain		Animal	Ελλαδα	2	0		

	EBLV-2	Lyssavirus (unspecified virus)
Cattle (bovine animals)		
Dogs - stray dogs		
Cats - stray cats		

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.13 Q-FEVER

2.13.1 General evaluation of the national situation

A. Coxiella burnetii (Q-fever) general evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Coxiella burnetii (Q fever) in animals
AFFECTED SPECIES: Animals/ sheep and goats mainly

Surveillance system
There is no official National monitoring program in place. Sporadic blood (sera) samples are officially collected and examined following notification of abortion at farm level, especially from sheep and goats.

Results of monitoring

In 2010 , 306 sampling units (animals : Cattle n= 11, sheep n =181, goats n=114) were tested for Coxiella burnetii and 56 found positive.
Data are presented in the relevant table of EFSA web based electronic system for 2010 zoonoses monitoring

In 2009 , 66 units (animals) were tested for Coxiella burnetii and 13 found positive.
Data are presented in the relevant table of EFSA web based electronic system for 2009 zoonoses monitoring

Epidemiological history
During the period 2001-2006 Coxiella burnettii was detected in 68 small ruminant flocks and 1 bovine herd (Table 1). Animal infection rate in affected flocks ranged from 2.1 % to 31.5%. Findings, along with previously conducted studies indicate the existence of the disease in animals. However, no data for animals or foods exist on a systematic basis.

Table 1.: Q fever in small ruminants, 2000-2006.

Year	2001	2002	2003	2004	2005	2006
Number of infected flocks	28	17	1	8	7	7

Source: MRDF

2.13.2 Coxiella (Q-fever) in animals

A. C. burnetii in animal - Sheep and goats - at farm - Clinical investigations - suspect sampling

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Coxiella burnetii (Q fever) in animals
AFFECTED SPECIES: Animals/ sheep and goats mainly

Surveillance system
There is no official / National program in place. Sporadic blood (sera) samples are collected and examined following notification of abortion at farm level , especially from sheep and goats.

Results of monitoring
Data are presented in the relevant table of 2008 EFSA web based electronic system for zoonoses monitoring

Epidemiological history
During the period 2001-2006 Coxiella burnettii was detected in 68 small ruminant flocks and 1 bovine herd (Table 1). Animal infection rate in affected flocks ranged from 2.1 % to 31.5%. Findings, along with previously conducted studies (7), indicate the existence of the disease in animals. However, no data for animals or foods exist on a systematic basis.

Table 1. Q fever in small ruminants, 2000-2006.
Number of infected flocks:
Year200120022003200420052006
28171877
Source: MRDF (Hellenic Ministry of Rural Development and Food)

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

A. Escherichia coli general evaluation

National evaluation of the recent situation, the trends and sources of infection

Additional information

Results of investigations in the year 2010
Only targeted food samples (n= 148) were tested for E.coli spp- non pathogenic in 2010 with negative results.

3.1.2 Antimicrobial resistance in Escherichia coli, non-pathogenic

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
Fluoroquinolones	Ciprofloxacin		0.03	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Animals

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
Fluoroquinolones	Ciprofloxacin		0.03	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
Fluoroquinolones	Ciprofloxacin		0.03	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

Table Cut-off values for antibiotic resistance of E. faecalis in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		512	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		32	

Table Cut-off values for antibiotic resistance of E. faecalis in Animals

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of E. faecalis in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		512	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		32	
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of E. faecalis in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		512	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		32	
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of E. faecium in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of E. faecium in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of E. faecium in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

A. Histamine General evaluation

National evaluation of the recent situation, the trends and sources of infection

DISEASE/AGENT: Histamine in Food
Surveillance system
There is no official monitoring program or systematic scheme applied for Histamine in food. Sporadic samples from fish and fishery products are examined in the designated national veterinary laboratory in Thessalonica- Grrece. Targeted fish species for testing and detecting Histamine are: Scrombridae, Clupeidae, Engraulidae, Coryfenidae, Pomatomidae and Scrombresosidae. Related Legislation: Community Regulation (EC): 1141/2007.

Results of monitoring
Data are presented in the relevant table of EFSA web based electronic system for 2009 zoonoses monitoring.

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

5. FOODBORNE

Foodborne outbreaks are incidences of two or more human cases of the same disease or infection where the cases are linked or are probably linked to the same food source. Situation, in which the observed human cases exceed the expected number of cases and where a same food source is suspected, is also indicative of a foodborne outbreak.

A. Foodborne outbreaks

System in place for identification, epidemological investigations and reporting of foodborne outbreaks

Foodborne outbreaks are included in the Mandatory Notification System of the Hellenic Centre for Diseases Control and Prevention (HCDCP).The competent authority is the Food-borne and Water-borne Diseases Section of the HCDCP.

Once a food-borne outbreak is notified, the public health professionals conduct an epidemiological investigation in order to estimate the extent of the outbreak, identify the source and take control measures. Furthermore, the Public Health Directorate of the competent Prefecture, the National Food Agency as well as the Ministry of Rural Development and Food are informed and conduct the environmental investigation, whenever it is needed.

Description of the types of outbreaks covered by the reporting:

Any type of outbreak, either general or household, is reported through Mandatory Notification System. In this report the outbreaks with more than 10 cases are included (n=9).

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

Although the number of reported food-borne outbreaks has been quite stable since 2004, a slight decrease was noticed in 2011, when 42 food-borne/water-borne outbreaks were reported. This finding should be interpreted cautiously due to the probable under-reporting.

Relevance of the different causative agents, food categories and the agent/food category combinations

Salmonella spp. was the predominant causative agent of the reported food-borne outbreaks. This is a finding consistent with previous years.

Relevance of the different type of places of food production and preparation in outbreaks

Twenty five (59.5%) of the outbreaks were domestic (only one household was involved).

Evaluation of the severity and clinical picture of the human cases

With regard to the severity of illness, 117 (22.8%) out of the 513 outbreak-related cases, were hospitalized. Finally, no outbreak-related deaths were reported in 2011.

Additional information

It should be mentioned that the reporting date was used for the analysis of data.

Table Foodborne Outbreaks: summarised data

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Salmonella - S. Typhimurium	0	0	0	0	0	0
Salmonella - S. Enteritidis	2	32	14	0	0	2
Salmonella - Other serovars	1	14	14	0	0	1
Campylobacter	0	0	0	0	0	0
Listeria - Listeria monocytogenes	0	0	0	0	0	0
Listeria - Other Listeria	0	0	0	0	0	0
Yersinia	0	0	0	0	0	0
Escherichia coli, pathogenic - Verotoxigenic E. coli (VTEC)	0	0	0	0	0	0
Bacillus - B. cereus	0	0	0	0	0	0
Bacillus - Other Bacillus	0	0	0	0	0	0
Staphylococcal enterotoxins	0	0	0	0	0	0
Clostridium - Cl. botulinum	0	0	0	0	0	0
Clostridium - Cl. perfringens	0	0	0	0	0	0

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Clostridium - Other Clostridia	0	0	0	0	0	0
Other Bacterial agents - Brucella	0	0	0	0	0	0
Other Bacterial agents - Shigella	0	0	0	0	0	0
Other Bacterial agents - Other Bacterial agents	0	0	0	0	0	0
Parasites - Trichinella	0	0	0	0	0	0
Parasites - Giardia	0	0	0	0	0	0
Parasites - Cryptosporidium	0	0	0	0	0	0
Parasites - Anisakis	0	0	0	0	0	0
Parasites - Other Parasites	0	0	0	0	0	0
Viruses - Norovirus	0	0	0	0	0	0
Viruses - Hepatitis viruses	0	0	0	0	0	0
Viruses - Other Viruses	0	0	0	0	0	0
Other agents - Histamine	0	0	0	0	0	0
Other agents - Marine biotoxins	0	0	0	0	0	0
Other agents - Other Agents	0	0	0	0	0	0

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Unknown agent	5	325	5	0	0	5