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 2007

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Greece**
Reporting Year: **2007**

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/ 99/ EC[1]. 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 2007. 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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[1] 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:

2007 DEMOGRAPHIC DATA. GREECE
SUSCEPTIBLE POPULATION: (please advise electronic tables in the EFSA Web – based zoonoses system)
Source of information: Computerized Data Base from Animal Health Directorate of the Hellenic Ministry of Agriculture (2007 update figures). These statistics and numerical values may vary from other national or E.U. official sources of animal population records.

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks	Year*	Number of slaughtered animals	Year*	Livestock numbers (live animals)	Year*	Number of holdings	Year*
Birds	pet animals					28570		566	
Cattle (bovine animals)	dairy cows and heifers	14686				251536			
	meat production animals	18028				495796			
	calves (under 1 year)					134425			
	in total	32714		260683		881759			
Deer	farmed - in total	126				8292			
Ducks	in total	2060		6550		16288			
Gallus gallus (fowl)	parent breeding flocks, unspecified - in total	76				227200		21	
	mixed flocks/ holdings	675		7281667		3082125		139	
	breeding flocks for meat production line - in total	208				1198180		85	
	laying hens	707		2496201		6700936		426	
	broilers	2197		101584779		24369565		1242	
	breeding flocks for egg production line - in total	14				93500		4	
	in total	3877		111362647		35672306		1896	
Geese	in total	1127		2686		8401			
Goats	milk goats			531504					
	animals under 1 year			3340774					
	in total	21226		3872278		2949275			
Pigs	breeding animals					110000			
	fattening pigs			1939178		1939178			
	in total	4547		1939178		2049178			
Sheep	milk ewes			899869					
	animals under 1 year (lambs)			5949639					
	in total	64198		6849508		6214900			
Solipeds, domestic	horses - in total	26379				47825			
Turkeys	meat production flocks	87				292100		49	
	parent breeding flocks	13				23200		7	
	in total	100		474031		315300		56	
Wild boars	farmed - in total					15365	2006		
Dogs	in total					278450		83009	
Quails	in total	4				6000		4	
Cats	in total			314280		233701		74118	
Pigeons	in total			314280					
Ostriches	in total	58		6978		2419			
Guinea fowl	in total			1070					
Other animals	in total	107899				468235			
	from hunting	20				254110		662	
Rabbits	in total	12431		2412108		355424			

Footnote

The parent breedings flocks- unspecified are considered flocks for mixed production line (egg and meat line).

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: Salmonella
TARGETED SPECIES: Other Animals (non poultry)
Surveillance system
There is not any systematic Salmonella monitoring program in force for other animals.
Data are based on the samples sporadically submitted to the laboratories. Especially for the year 2007 a Pig EU baseline study was carried out in order to identify the Salmonella prevalence in fattening pigs for slaughter.
Method used:
The bacteriological method ISO 6579 for detecting of Salmonella spp
Reporting Year 2007: 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) .
Epidemiological history:During the year 2006 three (3) unspecified salmonella spp. Strains in pigs and two (2) of S. Abortus ovis in sheep were reported.
DISEASE/ AGENT: Salmonella
Targeted category : Food
Surveillance system:
Routine examination and targeted sampling at retail level, processing plan and slaughterhouse based on National and Community legislation.
Method used:
The ISO 6579/ 2002 is used for the detection of Salmonella in food.
Summary epidemiological report for the year 2007
Summary Report (Ref. year: 2007)
The 2007 reported Salmonella Serovars in Food (per category of interest) are presented as follows:
1. Broiler meat and products thereof (all categories)
Samples tested: 156
Samples positive: 41
Reported serovars : S. Enteritidis(n=22) , S.Livingstone (n=5), S. Thompson (n =5) , S, Blockley(n=2) , S. Hadar (n=1) , S. Wentworth (n=1) and S. Virchow (n =5).
2. Turkey meat and products thereof (all categories)
Samples tested: 26
Samples positive: 0
Reported serovars :
3. Pig meat and products thereof (all categories)
Samples tested: 151
Samples positive: 1

Reported serovars : S. Typhimurium (n=1)
4. Bovine meat and products thereof (all categories)
Samples tested: 86
Samples positive: 1
Reported serovars : S. Typhimurium (n=1)
5.Meat from other animals and products thereof (all categories)
Samples tested: 307
Samples positive: 0
Reported serovars :
6. Milk and milk products (all categories)
Samples tested: 130
Samples positive:1
Reported serovars : S. Enteritidis(n=1)
7. Eggs and egg products(all categories)
Samples tested: 278
Samples positive: 0
Reported serovars :
8. Fish and fish products (all categories)
Samples tested: 149
Samples positive: 1
Reported serovars :
10.Other Food (all categories)
Samples tested: 201
Samples positive: 1
Reported serovars : S. Enteritidis(n=1)
Overall Salmonella reported Food Prevalence (for all categories) = 2,40 % (46/ 1914*100)
Overall Salmonella reported Food Prevalence at retail level (for all categories) = 0,78 % (13/ 1673*100)

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

DISEASE/ AGENT: Salmonellosis, Salmonella spp.
Targeted materials: Feed samples of animal origin, plant origin and compound feedingstuffs
Surveillance system:
The new legal requirements (new zoonoses Directive and Regulation on Salmonella) had changed the existing monitoring situation and systems at EU level and new surveillance strategies for monitoring Salmonella agents are and will be in force in fore coming years in accordance with Community targets set and approved . Rapid adaptation and compliance on the new Salmonella monitoring programmes and schemes are expected to be regulated and finalized the next years in all the EU member states.
Measures in case of positive findings
According to the current EU Directives.
The 2007 few Salmonella (n=5) positive units (275 batches tested) reported by the National Reference Laboratory for Salmonella (NRLS) derived from fish meal and pet food.
The 2006 reported Salmonella serovars , isolated and serotyped by the National Reference Laboratory for Salmaonella are presented below :
Compound feedingstuffs:
S. infantis , S. Umbilo, S. Paratyphi B (from poultry – final product , n=1 per each serovar)
Feed material of animal origin :

S. Blockley (from poultry – offal meal, n=3), S.Agona (from poultry – offal meal, n=3), S. Orianienberg (from poultry – offal meal, n=4)
Salmonella in other feed matter (plant origin) : No positive samples were reported

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History
Reporting Year 2005 :
The 2005 reported Salmonella serovars (n=18) from feed of animal origin , isolated and serotyped by the National Reference Laboratory for Salmaonella are presented below:
1. S.Bredeney (from poultry offal meal)
2. S.Blockley (from poultry offal meal)
3. S. Carro (from poultry offal meal)
4. S.Kedougou (from poultry offal meal)
5. S.Agona (from poultry offal meal)
6. S.Oranienberg (from poultry offal meal)
7. S.Typhimurium (from poultry offal meal)

The 2005 Salmonella monitoring in compound feedstuffs revealed the following Salmonella serovares (n=14) :
1. S. Bredeney (8) (from poultry- meat line / final product)
2. S. Mbandaka (3) (from poultry- meat line / final product)
3. S. Havana (1) (from poultry- meat line / final product)
4. S. Salamae (1) (reported on the web as unspecified salmonella serovar in some tables. Raw data identified S. salamae as S. 1,4,12,27:b:[e,n,x]- from poultry- meat line / final product)
5. S. Salmonella spp. (1)

Additional information

History. Salmonella in Food
Summary epidemiological report for the year 2006
The 2006 Salmonella Serovars in Food reported by the National Reference Laboratory (NRL) for Salmonellosis in Greece are presented below:
I. Salmonella spp. in poultry meat and products thereof & Salmonella in red meat and products thereof :
From 2.034 food sample units tested under the specified category, 31 were found positive in Salmonella. The reported salmonella serovars from positive samples in food were : S. Blockley (n=8) , S. Enteritidis (n=4) , S. Typhimurium (n=4), S. Thompson (n=4), S. Indiana (n=3), S. Infantis (n=3), S. Bredeney (n=3), S. Anatum (n=1), S.Virchow (n=1).
The annual (2006) Salmonella prevalence rate for the category I (% positive samples) was 1,52 %.
II. Salmonella spp. in milk , dairy products and other food
From 1.916 food sample units tested under the specified category, 4 were found positive in Salmonella. The reported salmonella serovars from positive samples in food were : S. Kottbus (n=2) , S. Enteritidis (n=1) and S. Infantis (n=1)
The annual (2006) Salmonella prevalence rate for the category II (% positive samples) was 0,20 %.
The 2006 reported overall national Salmonella prevalence rate in food (categories I and II) based on food units tested was 0,89 %.
Summary evaluation for the year 2005
The 2005 Serovars in Food reported by the National Reference Laboratory (NRL) for Salmonellosis in Greece (Located in Chalkida, Evia prefecture) are presented below:
S Enteritidis, S, Blockley, S. Typhimurium, S. kottbus, S. Adamstua, S.Infantis S. Kentucky, S.

Salamae, S. Schwarzengrum, S. Indiana, S. S.Livingstone, S. Heidelberg, S. Bredeney, S. Derby, S. Enterica, S.Meleagridis, S. virchow and Salmonella spp.
Epidemiological report analysis from previous years:
The reporting rate in 2005 remained almost stable with no significant variations compared to 2004 and 2003 respectively. The total food units (samples) tested under a targeted sampling procedure from meat , dairy , egg , fishery and other food products were 7.064. The Salmonella positive food sample units found out of the total number, were 81 (isolates). Based on 2005 results , the three most frequent and predominant Salmonella reported serovars in food were: S.enteritidis, S. Livingstone and S. Blockley.
The 2004 Serovars in Food reported by the National Reference Laboratory (NRL) for Salmonellosis in Greece are: S Enteritidis, S. Amootive, S, Diarizonae, S, Blockley, S. Typhimurium, S. Indiana, S. Hadar, S. S.Livingstone, S.Meleagridis, S. virchow, S. Muenchey, S. Schwein, and S. Anatum.
In 2003, an increased trend of reporting samples from food products was observed. More than a 2-fold increase (7.192 units) occurred in samples tested in 2003 for Salmonella compared to 2001 report (3.064). A total number of 125 Salmonella serovars were isolated during 2003 compared to 101 in 2002. The predominant serovars in 2003, 2002 and 2001 were S. Enteritidis (61 Isolates), S. Enteritidis (38 isolates) and 2001 S. Livingstone (34 isolates) respectively. In the year 2004 the predominant Salmonella serovar originated from breeding poultry (Gallus gallus) was S. Blockley.

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 unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Livingstone	S. Thompson	S. Blockley	S. Hadar	S. Wandsworth	S. Virchow
Meat from broilers (Gallus gallus)														
fresh														
- at slaughterhouse		single												
- at processing plant		single	25 gr	27	15				5	5			5	
- at retail		single	25 gr	69	8	6					1		1	
meat products														
raw but intended to be eaten cooked														
- at processing plant		single	25 gr	55	18	16					1		1	
- at retail		single	10 gr	5	0									
Meat from turkey														
fresh														
- at retail		single	25 gr	4	0									

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows'								
raw		single	25 ml	3	0			
pasteurised milk								
- at retail		single	25 ml	10	0			
Milk, goats'								
pasteurised								
- at retail		single	25 ml	10	0			
Dairy products (excluding cheeses)								
ice-cream								
- at retail		single	25 gr	53	0			
yoghurt								
- at retail - Monitoring - official sampling		single	25 gr	20	0			
dairy products, not specified								
ready-to-eat								
- at retail - Monitoring - official sampling		single	25 gr	430	1	1		
Cheeses, made from mixed milk from cows, sheep and/ or goats								
- at retail - Monitoring - official sampling		single	25 gr	47	0			

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from pig								
fresh								
- at slaughterhouse		single	25 gr	5	0			
- at retail		single	25 gr	30	0			
meat products								
raw but intended to be eaten cooked								
- at processing plant		single	25 gr	22	1		1	
- at retail		single	10 gr	5	0			
cooked, ready-to-eat								
- at processing plant		single	25 gr	89	0			
Meat from bovine animals								
fresh								
- at slaughterhouse		single	25 gr	10	0			
- at processing plant		single	25 gr	5	1		1	
- at retail		single	25 gr	6	0			
meat preparation								
intended to be eaten cooked								
- at processing plant		single	25 gr	13	0			
- at retail		single	25 gr	30	0			
meat products								
cooked, ready-to-eat								
- at retail		single	25 gr	22	0			
Meat, mixed meat								
meat products								
raw but intended to be eaten cooked								
- at processing plant		single	25 gr	12	0			
- at retail		single	25 gr	19	0			
cooked, ready-to-eat								
- at retail		single	10 gr	270	0			
minced meat								
- at retail		single	25 gr	10	0			

Footnote

ISO 6579/ 2000, Official sampling

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Eggs								
table eggs								
- at packing centre		single	25 gr	128	0			
- at retail		single	25 gr	101	0			
raw material (liquid egg) for egg products		single	25 gr	10	0			
Egg products								
- at retail		single	25 gr	34	0			
Fishery products, unspecified								
- at retail		single	25 gr	2	1	1		
Crustaceans								
unspecified								
raw								
- at retail		single	25 gr	5	0			
Molluscan shellfish								
cooked								
- at retail		batch	25 gr	43	0			
Live bivalve molluscs		single	25 gr	64	0			
Ready-to-eat salads								
- at retail - Monitoring - official sampling		single	25 gr	52	0			
Other processed food products and prepared dishes								
sandwiches								
- at retail - Monitoring - official sampling		single	25 gr	142	1	1		
Bakery products								
- at retail - Monitoring - official sampling		single	25 gr	6	0			
Fish								
cooked								
frozen								
- at retail - Monitoring - official sampling		single	25 gr	6	0			

gravad / slightly salted								
- at retail - Monitoring - official sampling		batch		5	0			
Other food								
- at retail - Monitoring - official sampling		single	25 gr	1	0			

2.1.4. Salmonella in animals

A. Salmonella spp. in Gallus gallus - breeding flocks for egg production and flocks of laying hens

Monitoring system

Diagnostic/ analytical methods used

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

Laying hens: Day-old chicks

Bacteriological method: ISO 6579:2002

Laying hens: Rearing period

Bacteriological method: ISO 6579:2002

Laying hens: Production period

Bacteriological method: ISO 6579:2002

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

DISEASE/ AGENT: Salmonellosis, Salmonella serovars
TARGETED SPECIES: Poultry breeding flocks- Callus gallus
Susceptible population:
Parent stock (referred as breeding stock on EFSA web – zoonoses system) for egg and meat production line is estimated around 1.291.680 birds (2007 national zoonoses statistics).
A control program, according to the Annex III of the Dir. 92/ 117, was already in force since 1998. Moreover, it is important to mention the implementation of the baseline study in breeding flocks of Gallus gallus supervised by the Hellenic central competent veterinary authorities which was in line with the uniform EU guidelines approved by the Commission. The results were evaluated by the Commission in order to set up the foreseen Community targets towards the reduction of Salmonella prevalence in Breeders at flock level. A new 3-year national monitoring programme for Salmonella in breeding flocks of Gallus, gallus has recently approved and adopted to be implemented from 01-01-2007 to 31-12 -2009 expected to meet the Community targets for Greece.

Method used
The methods ISO 6579 and ISO 6580 have been used for the detection of Salmonella spp.
Measures in case of positive findings
Slaughter of infected flock or prohibition of placement of hatching eggs to
the hatchery for as long as the disease exists.
Epidemiological and statistical report:
The predominant Salmonella Serovars isolated and identified during the year 2007 by the National Reference Laboratory (NRL-Located in Chalkida, Evia prefecture) were S. enteritidis (n=3)and S. Hadar (n=3)from parent breeding flocks for meat production line.
Eight (8) Salmonella Serovars isolated and serotyped during the year 2006 by the National Reference Laboratory (NRLS-Located in Chalkida, Evia prefecture) derived from 8 positive breeding flocks out of 318 flock units tested:
S. Enteritidis (n=1)
S. Montevideo (n=1)
S. London (n=2)
S. Muenster (n=1)
S. Mbandaka (n=1)
S. Blockley (n=1)
S. Livingstone (n=1)History
Year 2005 :
The Serovars (n=30) isolated and identified during the year 2005 by the National Reference Laboratory for Salmonella are presented below :
1. S. Enteritidis (15)
2. S. Typhimurium (1)
3. S. Seftenberg (1)
4. S. Infantis (1)
5. S. Enterica (1)
6. S. Blockley (3)
7. S. Isangi (1)
8. S. Corvalis(1)
9. S. Kottbus (5)
10. S. Livingstone (1)
Year 2004:
Serovars isolated and identified during the year 2004 by the National Reference Laboratory (NRL-Located in Chalkida, Evia prefecture) for Salmonellosis are presented below :
1. S. Enteritidis
2. S. Typhimurium
3. S. Seftenberg
4. S. Tomson
5. S. Virchow
6. S. Blockley
7. S. Pullorum
8. S. London
9. S. Kottbus
Looking retrospectively the reported Salmonella serovars for the years 2002 and 2003 are given below:
1. S. Braenderup

2. S. Enteritidis
3. S. Typhimurium
4. S. Meleagritis
5. S. Cauno
6. S. Virchow
7. S. Blockley
8. S. Livingstone
9. S.Anatum

B. Salmonella spp. in Gallus gallus - breeding flocks for meat production and broiler flocks

Monitoring system

Diagnostic/ analytical methods used

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

Broiler flocks: Day-old chicks

Bacteriological method: ISO 6579:2002

Broiler flocks: Rearing period

Bacteriological method: ISO 6579:2002

Broiler flocks: Before slaughter at farm

Bacteriological method: ISO 6579:2002

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

DISEASE/ AGENT: Salmonellosis / Salmonella serovars
INFECTED SPECIES: Commercial and non –commercial Poultry other than breeding flocks
Surveillance system:
Several surveys and monitoring activities are implemented in the country based on suspected samples submitted into the laboratories for further investigation.
Method used

The method ISO 6579 for detecting Salmonella spp.
Reporting Year 2007:
Eight (8) different Serovars isolated, serotyped and reported by the National Reference Laboratory (NRL) for Salmonellosis in Greece (Located in Chalkida, Evia prefecture) during the Year 2007.
Among all (14), the predominant Salmonella serovars reported at rearing period in Broilers were S. Typhimurium (4) and S. Livingstone (3).
Reporting Year 2006 , Results of Salmonella monitoring :
Thirty one (31) positive flocks and 13 different Salmonella Serovars were found and reported. The majority of Salmonella strains in positive poultry flocks were reported from Broilers – day old chicks (n=16 flocks) following
Turkeys production period (n=5) and Laying hens in the rearing period (n= 3) respectively. The five (5) most prevalent Salmonella serovars reported were S. Newport, S. Enteritidis, S. Livingstone, S.Blockley and Salmonella spp.
History:
Reporting Year 2005 , Monitoring Results:
One hundred ninety six (196) Strains isolated, serotyped and reported by the National Reference Laboratory (NRL) for Salmonella in Greece during the Year 2005.
The majority of Salmonella strains in positive poultry flocks were reported from Broilers at rearing period (n=46), Laying hens in the production stage (n= 105) and from one day old Broilers chicks (n= 38) respectively.
Among all (n= 196, 43 different serotypes), the seven (7) most frequent and predominant Salmonella serovars are given below:
1. S. Enteritidis (n=27)
2. S. Livingstone (n=39)
3. S. Typhimurium (n= 12)
4. S. Virchow (n= 12)
5. S. Blockley (n=10)
6. S. meleagridis (n=17)
7. S. Cerro (n=11)

Reporting Year 2004:
Twenty two (22) different Serovars isolated, serotyped and reported by the National Reference Laboratory (NRL) for Salmonellosis in Greece during the Year 2004. Among all (22), the predominant Salmonella serovars reported at rearing period in Broilers were S Blockley and S. Meleagridis

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	S. Hadar	S. Infantis	S. Virchow	Salmonella spp., unspecified
Gallus gallus (fowl)										
parent breeding flocks for egg production line										
day-old chicks		flock	1	0						
during production period		flock	14	0						
parent breeding flocks for meat production line										
day-old chicks		flock	2	0						
during rearing period		flock	5	0						
during production period		flock	22	5	2		3			
parent breeding flocks, unspecified										
day-old chicks		flock	2	1	1					
during rearing period		flock	1	0						
during production period		flock	2	0						

Footnote

Control system: routine monitoring, ISO 6579/ 2002 / applicable for all data reporting cells.

Table Salmonella in other poultry

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Mbandaka	S. Gallinarum	S. Livingstone	S. Blockley	S. Meleagridis
Gallus gallus (fowl)												
laying hens		flock	10	1				1				
day-old chicks		flock	11	1	1							
during rearing period		flock	40	0								
during production period		flock										
broilers		flock	55	3						2	1	
day-old chicks		flock	49	1			1					
during rearing period		flock	4	0								
Ducks												
Geese												
meat production flocks		flock	1	0								
Turkeys												
meat production flocks		flock	27	2		1			1			
day-old chicks		flock	2	1						1		
Quails		flock	1	0								

Birds												
wild		flock	21	2	1							1
Pigeons		flock	16	1		1						
Ostriches		flock	2	0								
Pheasants		flock	4	0								
Partridges		flock	11	2		2						

Footnote

official sampling,clinical investigation , ISO 6579/ 02

Table Salmonella in other animals (Part A)

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Abortusovis	S. Blockley	S. Bovismorbificans	S. Newport	S. Ohio	S. Mishmarhaemek	S. Montevideo	S. Thompson	S. Agona	S. Paratyphi B	S. Bredeney	S. Hermannswerder	S. enterica subsp. enterica
Cattle (bovine animals)		animal	34	5			5													
calves (under 1 year)		animal	12	1			1													
adult cattle over 2 years		animal	22	4		2	2													
Sheep		animal	124	1				1												
Goats		animal	52	0																
Pigs		animal																		
fattening pigs **baseline survey**		animal	12	0																
- at slaughterhouse		animal	308	85	2	16	9		2	1	1	1	2	4	6	1	1	5	1	7
Solipeds, domestic		animal	1	0																
Fur animals		animal	2	0																
Rabbits		animal	3	0																

Footnote

Results from NRL for Salmonella (NRLS). Targeted sampling, ISO 6579/ 2002. Pathologic material:Internal organs, aborted fetus from Cattle, sheep,goats,rabbits.

For Pigs: EU baseline survey / internal organs, illeocecal, lymphnodes.

Table Salmonella in other animals (Part B)

	S. Anatum	S. Derby	S. London	S. Mbandaka	S. Muenster	S. Oldenburg	S. Szentes	S. Umbilo	S. Kottbus
Cattle (bovine animals)									
calves (under 1 year)									
adult cattle over 2 years									
Sheep									
Goats									
Pigs									
fattening pigs **baseline survey**									
- at slaughterhouse	2	9	1	1	2	3	1	4	3
Solipeds, domestic									
Fur animals									
Rabbits									

Footnote

Results from NRL for Salmonella (NRLS). Targeted sampling, ISO 6579/ 2002. Pathologic material:Internal organs, aborted fetus from Cattle, sheep,goats,rabbits.
For Pigs: EU baseline survey / internal organs, illeocecal, lymphnodes.

2.1.5. Salmonella in feedingstuffs

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of land animal origin								
dairy products	official contrors/ routin e examination	batch		2	0			
meat meal				15	0			
poultry offal meal	official controls, ISO 6579/ 2002	batch		30	0			
Feed material of marine animal origin								
fish meal		batch		152	3			3
other fish products		batch		34	0			
Other feed material		batch		5	0			

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of cereal grain origin								
maize	Sporadic examination/ ISO 6579/ 2002	batch		2	0			

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Compound feedingstuffs for poultry (non specified)								
process control	Routine examination, ISO 6581	single		5	0			
Pet food								
dog snacks (pig ears, chewing bones)	Routine examination, ISO 6579/ 2002	batch		30	2			2

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

Serovars		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
Sources of isolates (*)		M	C	M	C	M	C	M	C
Number of isolates in the laboratory	N=								
Number of isolates serotyped	N=	0	1	85	0	5	1	0	0
Number of isolates per type									
S. Agona				1					
S. Anatum				2					
S. Blockley				2			1		
S. Bovismorbificans				1					
S. Bredeney				5					
S. Derby				9					
S. Enteritidis				2		2			
S. Ferruch			1						
S. Hadar						3			
S. Hermannswerder				1					
S. Kottbus				3					
S. London				1					
S. Mbandaka				1					
S. Mishmarhaemek				2					
S. Montevideo				4					
S. Muenster				2					
S. Newport				1					

S. Ohio			1					
S. Oranienburg			3					
S. Paratyphi B			1					
S. Szentes			1					
S. Thompson			6					
S. Typhimurium			16					
S. Umbilo			4					
Not typeable			9					
S. enterica subsp. enterica			7					

Footnote

(*) M : Monitoring, C : Clinical
Serovars of pigs : In the framework of the EU baseline study.

Table Salmonella serovars in food

Serovars		Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin	
Sources of isolates (*)		M	C	M	C	M	C	M	C	M	C
Number of isolates in the laboratory	N=										
Number of isolates serotyped	N=	0	0	0	0	0	0	0	0	0	0
Number of isolates per type											
S. Agona											
S. Anatum											
S. Blockley											
S. Bovismorbificans											
S. Bredeney											
S. Derby											
S. Enteritidis											
S. Ferruch											
S. Hadar											
S. Hermannswerder											
S. Kottbus											
S. London											
S. Mbandaka											
S. Mishmarhaemek											

S. Montevideo													
S. Muenster													
S. Newport													
S. Ochiogu													
S. Oranienburg													
S. Paratyphi B													
S. Szentes													
S. Thompson													
S. Typhimurium													
S. Umbilo													
Not typeable													
S. enterica subsp. enterica													

Footnote

(*) M : Monitoring, C : Clinical

2.1.7. Antimicrobial resistance in Salmonella isolates

Antimicrobial resistance is the ability of certain microorganisms to survive or grow in the presence of a given concentration of antimicrobial agent that usually would kill or inhibit the microorganism species in question. Antimicrobial resistant Salmonella strains may be transferred from animals or foodstuffs to humans.

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.

Table Antimicrobial susceptibility testing of S. Abortusovis in Sheep - quantitative data [Diffusion method]

	S. Abortusovis
	Sheep
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	1	0																										1				
Streptomycin	11	1	0									1																					
Amphenicols																																	
Chloramphenicol	12	1	0																											1			
Florfenicol	14	1	0																														1
Cephalosporins																																	
Cefotaxim	14	1	0																														1
Cephalothin	14	1	0																								1						
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																														1
Penicillins																																	
Ampicillin	13	1	0																									1					
Quinolones																																	
Nalidixic acid	13	1	0																									1					
Sulfonamides																																	
Sulfonamide	12	1	1	1																													
Tetracyclines																																	
Tetracyclin	14	1	0																											1			
Trimethoprim	10	1	0																														1

Table Antimicrobial susceptibility testing of S. Agona in Pigs - quantitative data [Diffusion method]

	S. Agona
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	1	0																			1											
Streptomycin	11	1	0											1																			
Amphenicols																																	
Chloramphenicol	12	1	0																				1										
Florfenicol	14	1	0																					1									
Cephalosporins																																	
Cefotaxim	14	1	0																											1			
Cephalothin	14	1	0																					1									
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																														1
Enrofloxacin	17	1	0																								1						
Penicillins																																	
Ampicillin	13	1	0																					1									
Quinolones																																	
Nalidixic acid	13	1	0																	1													
Sulfonamides																																	
Sulfonamide	12	1	0																						1								
Tetracyclines																																	
Tetracyclin	14	1	0																			1											
Trimethoprim	10	1	0																								1						

Table Antimicrobial susceptibility testing in S. Agona

n = Number of resistant isolates		
	S. Agona	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Sulfonamides		
Sulfonamide	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing in S. Anatum

n = Number of resistant isolates		
	S. Anatum	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Sulfonamides		
Sulfonamide	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. Anatum in Pigs - quantitative data [Diffusion method]

	S. Anatum
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																													
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	1	0																		1												
Streptomycin	11	1	0									1																					
Amphenicols																																	
Chloramphenicol	12	1	0																					1									
Florfenicol	14	1	0																					1									
Cephalosporins																																	
Cefotaxim	14	1	0																										1				
Cephalothin	14	1	0																			1											
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																														1
Enrofloxacin	17	1	0																						1								
Penicillins																																	
Ampicillin	13	1	0																				1										
Quinolones																																	
Nalidixic acid	13	1	0																					1									
Sulfonamides																																	
Sulfonamide	12	1	0																			1											
Tetracyclines																																	
Tetracyclin	14	1	0																		1												
Trimethoprim	10	1	0																						1								

Table Antimicrobial susceptibility testing in S. Blockley

n = Number of resistant isolates	S. Blockley	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Resistant to >4 antimicrobials	1	1
Sulfonamides		
Sulfonamide	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. Blockley in Pigs - quantitative data [Diffusion method]

	S. Blockley
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																														
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																		
Gentamicin	12	1	0																	1														
Streptomycin	11	1	0											1																				
Amphenicols																																		
Chloramphenicol	12	1	0																				1											
Florfenicol	14	1	0																				1											
Cephalosporins																																		
Cefotaxim	14	2	0																			1								1				
Fluoroquinolones																																		
Ciprofloxacin	15	1	0																															1
Enrofloxacin	17	1	0																							1								
Penicillins																																		
Ampicillin	13	1	0																		1													
Quinolones																																		
Nalidixic acid	13	1	0																1															
Sulfonamides																																		
Sulfonamide	12	1	0																						1									
Tetracyclines																																		
Tetracyclin	14	1	0																		1													
Trimethoprim	10	1	0																							1								

Table Antimicrobial susceptibility testing of S. Bredeney in Pigs - quantitative data [Diffusion method]

	S. Bredeney
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	2

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																															
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																			
Gentamicin	12	2	0																	2															
Streptomycin	11	2	1	1										1																					
Amphenicols																																			
Chloramphenicol	12	2	1	1																			1												
Florfenicol	14	2	0														1						1												
Cephalosporins																																			
Cefotaxim	14	2	0																						1			1							
Cephalothin	14	2	0																		2														
Fluoroquinolones																																			
Ciprofloxacin	15	2	0																																2
Enrofloxacin	17	2	0																							2									
Penicillins																																			
Ampicillin	13	2	0																		1		1												
Quinolones																																			
Nalidixic acid	13	2	0																1		1														
Sulfonamides																																			
Sulfonamide	12	2	1	1																	1														
Tetracyclines																																			
Tetracyclin	14	2	1	1																	1														
Trimethoprim	10	2	1	1																							1								

Table Antimicrobial susceptibility testing in S. Bredeney

n = Number of resistant isolates		
	S. Bredeney	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		2
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	2	0
Streptomycin	2	1
Amphenicols		
Chloramphenicol	2	1
Cephalosporins		
Cefotaxim	2	0
Fluoroquinolones		
Ciprofloxacin	2	0
Enrofloxacin	2	0
Fully sensitive	2	1
Penicillins		
Ampicillin	2	0
Quinolones		
Nalidixic acid	2	0
Sulfonamides		
Sulfonamide	2	1
Tetracyclines		
Tetracyclin	2	1
Trimethoprim	2	1

Table Antimicrobial susceptibility testing in S. Carno

n = Number of resistant isolates		
	S. Carno	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Sulfonamides		
Sulfonamide	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. Carno in Pigs - quantitative data [Diffusion method]

	S. Carno
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																															
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																
Gentamicin	12	1	0																	1												
Streptomycin	11	1	0										1																			
Amphenicols																																
Chloramphenicol	12	1	0																						1							
Florfenicol	14	1	0																						1							
Cephalosporins																																
Cefotaxim	14	1	0																								1					
Cephalothin	14	1	0																			1										
Fluoroquinolones																																
Ciprofloxacin	15	1	0																													1
Enrofloxacin	17	1	0																								1					
Penicillins																																
Ampicillin	13	1	0																				1									
Quinolones																																
Nalidixic acid	13	1	0																		1											
Sulfonamides																																
Sulfonamide	12	1	0																				1									
Tetracyclines																																
Tetracyclin	14	1	0																	1												
Trimethoprim	10	1	0																						1							

Table Antimicrobial susceptibility testing of S. Derby in Pigs - quantitative data [Diffusion method]

	S. Derby
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	5

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																													
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	5	0																	2	1	2											
Streptomycin	11	5	4	4								1																					
Amphenicols																																	
Chloramphenicol	12	5	0																				4	1									
Florfenicol	14	5	0																				2	2	1								
Cephalosporins																																	
Cefotaxim	14	5	0																											2	2		1
Cephalothin	14	5	0																			1	1	3									
Fluoroquinolones																																	
Ciprofloxacin	15	5	0																						1			1					3
Enrofloxacin	17	5	0																							2	2	1					
Penicillins																																	
Ampicillin	13	5	0																				5										
Quinolones																																	
Nalidixic acid	13	5	0																	1	3	1											
Sulfonamides																																	
Sulfonamide	12	5	4	4																1													
Tetracyclines																																	
Tetracyclin	14	5	4	4																1													
Trimethoprim	10	4	2	2																	1	1											

Table Antimicrobial susceptibility testing in S. Derby

n = Number of resistant isolates	S. Derby	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		5
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	5	0
Streptomycin	5	4
Amphenicols		
Chloramphenicol	5	0
Cephalosporins		
Cefotaxim	5	0
Fluoroquinolones		
Ciprofloxacin	5	0
Enrofloxacin	5	0
Fully sensitive	5	1
Penicillins		
Ampicillin	5	0
Quinolones		
Nalidixic acid	5	0
Resistant to 2 antimicrobials	5	2
Resistant to 4 antimicrobials	5	2
Sulfonamides		
Sulfonamide	5	4
Tetracyclines		
Tetracyclin	5	2
Trimethoprim	5	4

Table Antimicrobial susceptibility testing of S. Enteritidis in Pigs - quantitative data [Diffusion method]

	S. Enteritidis
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																														
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																		
Gentamicin	12	1	0																		1													
Streptomycin	11	1	0												1																			
Amphenicols																																		
Chloramphenicol	12	1	0																				1											
Florfenicol	14	1	0																				1											
Cephalosporins																																		
Cefotaxim	14	1	0																									1						
Cephalothin	14	1	0																				1											
Fluoroquinolones																																		
Ciprofloxacin	15	1	0																															1
Enrofloxacin	17	1	0																							1								
Penicillins																																		
Ampicillin	13	1	0																			1												
Quinolones																																		
Nalidixic acid	13	1	0																	1														
Sulfonamides																																		
Sulfonamide	12	1	0																				1											
Tetracyclines																																		
Tetracyclin	14	1	0																			1												
Trimethoprim	10	1	0																								1							

Table Antimicrobial susceptibility testing of S.Enteritidis in animals

n = Number of resistant isolates

S. Enteritidis

	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		Gallus gallus (fowl) - laying hens		Gallus gallus (fowl) - broilers	
Isolates out of a monitoring programme			yes									
Number of isolates available in the laboratory			2									
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides												
Gentamicin			1	0								
Streptomycin			1	0								
Amphenicols												
Chloramphenicol			1	0								
Cephalosporins												
Cefotaxim			1	0								
Fluoroquinolones												
Ciprofloxacin			1	0								
Enrofloxacin			1	0								
Fully sensitive			1	1								
Penicillins												
Ampicillin			1	0								
Quinolones												
Nalidixic acid			1	0								
Sulfonamides												
Sulfonamide			1	0								
Tetracyclines												
Tetracyclin			1	0								
Trimethoprim			1	0								

Table Antimicrobial susceptibility testing of S. Havana in Pigs - quantitative data [Diffusion method]

	S. Havana
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																													
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	1	0																	1													
Streptomycin	11	1	0								1																						
Amphenicols																																	
Chloramphenicol	12	1	0																		1												
Florfenicol	14	1	0																	1													
Cephalosporins																																	
Cefotaxim	14	1	0																									1					
Cephalothin	14	1	0																			1											
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																														1
Enrofloxacin	17	1	0																							1							
Penicillins																																	
Ampicillin	13	1	0																			1											
Quinolones																																	
Nalidixic acid	13	1	0																		1												
Sulfonamides																																	
Sulfonamide	12	1	1	1																													
Tetracyclines																																	
Tetracyclin	14	1	0																	1													
Trimethoprim	10	1	1	1																													

Table Antimicrobial susceptibility testing in S. Havana

n = Number of resistant isolates		
	S. Havana	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Resistant to 2 antimicrobials	1	0
Sulfonamides		
Sulfonamide	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. Kiambu in Turkeys - quantitative data [Diffusion method]

	S. Kiambu
	Turkeys
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	3

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	3	0																	1	1	1											
Streptomycin	11	3	0									1	2																				
Amphenicols																																	
Chloramphenicol	12	2	0																					1	1								
Florfenicol	14	3	0																				1			1	1						
Cephalosporins																																	
Cefotaxim	14	3	0																										1	1		1	
Cephalothin	14	3	0																			1		2									
Fluoroquinolones																																	
Ciprofloxacin	15	3	0																														3
Enrofloxacin	17	3	0																								1				1	1	
Penicillins																																	
Ampicillin	13	3	0																				1	1		1							
Quinolones																																	
Nalidixic acid	13	3	0																	1	1		1										
Sulfonamides																																	
Sulfonamide	12	3	0																		1		1	1									
Tetracyclines																																	
Tetracyclin	14	2	0																				1	1									
Trimethoprim	10	3	0																						1		1	1					

Table Antimicrobial susceptibility testing in S. Kiambu

n = Number of resistant isolates		
	S. Kiambu	
	Turkeys	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		3
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	3	1
Streptomycin	3	0
Amphenicols		
Chloramphenicol	3	0
Cephalosporins		
Cefotaxim	3	0
Fluoroquinolones		
Ciprofloxacin	3	0
Enrofloxacin	3	0
Fully sensitive	3	2
Penicillins		
Ampicillin	3	0
Quinolones		
Nalidixic acid	3	0
Tetracyclines		
Tetracyclin	3	1
Trimethoprim	3	0

Table Antimicrobial susceptibility testing in S. Kottbus

n = Number of resistant isolates	S. Kottbus	
	Turkeys	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. Kottbus in Turkeys - quantitative data [Diffusion method]

	S. Kottbus
	Turkeys
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																														
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																		
Gentamicin	12	1	0																		1													
Streptomycin	11	1	0										1																					
Amphenicols																																		
Chloramphenicol	12	1	0																					1										
Florfenicol	14	1	0																					1										
Cephalosporins																																		
Cefotaxim	14	1	0																										1					
Cephalothin	14	1	0																				1											
Fluoroquinolones																																		
Ciprofloxacin	15	1	0																															1
Enrofloxacin	17	1	0																									1						
Penicillins																																		
Ampicillin	13	1	0																			1												
Quinolones																																		
Nalidixic acid	13	1	0																		1													
Sulfonamides																																		
Sulfonamide	12	1	0																			1												
Tetracyclines																																		
Tetracyclin	14	1	0																			1												
Trimethoprim	10	1	0																									1						

Table Antimicrobial susceptibility testing in S. Mishmarhaemek

n = Number of resistant isolates	S. Mishmarhaemek	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		2
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	2	0
Streptomycin	2	2
Amphenicols		
Chloramphenicol	2	0
Cephalosporins		
Cefotaxim	2	0
Fluoroquinolones		
Ciprofloxacin	2	0
Enrofloxacin	2	0
Penicillins		
Ampicillin	2	0
Quinolones		
Nalidixic acid	1	0
Resistant to 3 antimicrobials	2	2
Sulfonamides		
Sulfonamide	2	2
Tetracyclines		
Tetracyclin	2	0
Trimethoprim	2	2

Table Antimicrobial susceptibility testing of S. Mishmarhaemek in Pigs - quantitative data [Diffusion method]

	S. Mishmarhaemek
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	2

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	2	0																				2										
Streptomycin	11	2	2	2																													
Amphenicols																																	
Chloramphenicol	12	2	0																					2									
Florfenicol	14	2	0																					2									
Cephalosporins																																	
Cefotaxim	14	2	0																												1	1	
Cephalothin	14	2	0																				1	1									
Fluoroquinolones																																	
Ciprofloxacin	15	2	0																														2
Enrofloxacin	17	2	0																								1	1					
Penicillins																																	
Ampicillin	13	2	0																				1	1									
Quinolones																																	
Nalidixic acid	13	1	0																		1												
Sulfonamides																																	
Sulfonamide	12	2	2	2																													
Tetracyclines																																	
Tetracyclin	14	2	0																		2												
Trimethoprim	10	2	2	2																													

Table Antimicrobial susceptibility testing of S. Paratyphi B in Pigs - quantitative data [Diffusion method]

	S. Paratyphi B
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	1	0																			1											
Streptomycin	11	1	0											1																			
Amphenicols																																	
Chloramphenicol	12	1	0																						1								
Florfenicol	14	1	0																						1								
Cephalosporins																																	
Cefotaxim	14	1	0																														1
Cephalothin	14	1	0																									1					
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																														1
Enrofloxacin	17	1	0																									1					
Penicillins																																	
Ampicillin	13	1	0																				1										
Quinolones																																	
Nalidixic acid	13	1	0																		1												
Sulfonamides																																	
Sulfonamide	12	1	0																1														
Tetracyclines																																	
Tetracyclin	14	1	0																			1											
Trimethoprim	10	1	0																								1						

Table Antimicrobial susceptibility testing in S. Paratyphi B

n = Number of resistant isolates	S. Paratyphi B	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Sulfonamides		
Sulfonamide	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing in S. Thompson

n = Number of resistant isolates		
	S. Thompson	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Sulfonamides		
Sulfonamide	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. Thompson in Pigs - quantitative data [Diffusion method]

	S. Thompson
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Streptomycin	11	1	0											1																			
Amphenicols																																	
Chloramphenicol	12	1	0																						1								
Florfenicol	14	1	0																					1									
Cephalosporins																																	
Cefotaxim	14	1	0																												1		
Cephalothin	14	1	0																						1								
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																													1	
Enrofloxacin	17	1	0																													1	
Penicillins																																	
Ampicillin	13	1	0																				1										
Quinolones																																	
Nalidixic acid	13	1	0																		1												
Sulfonamides																																	
Sulfonamide	12	1	0															1															
Tetracyclines																																	
Tetracyclin	14	1	0																			1											
Trimethoprim	10	1	0																							1							

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - quantitative data [Diffusion method]

	S. Typhimurium
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	4

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	4	0																1	1		2											
Streptomycin	11	4	3	2	1								1																				
Amphenicols																																	
Chloramphenicol	12	4	2	2																				1	1								
Florfenicol	14	4	2							2															2								
Cephalosporins																																	
Cefotaxim	14	4	0																									1	1		2		
Cephalothin	14	4	0																		2	1		1									
Fluoroquinolones																																	
Ciprofloxacin	15	4	0																												2	2	
Enrofloxacin	17	4	0																								2	2					
Penicillins																																	
Ampicillin	13	4	3	3																			1										
Quinolones																																	
Nalidixic acid	13	4	0																	3	1												
Sulfonamides																																	
Sulfonamide	12	4	3	3																		1											
Tetracyclines																																	
Tetracyclin	14	4	3	3																	1												
Trimethoprim	10	1	0																				1										

Table Antimicrobial susceptibility testing of S.Typhimurium in animals

n = Number of resistant isolates

S. Typhimurium

	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		Gallus gallus (fowl) - laying hens		Gallus gallus (fowl) - broilers	
Isolates out of a monitoring programme			yes									
Number of isolates available in the laboratory			5									
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides												
Gentamicin			5	0								
Streptomycin			5	3								
Amphenicols												
Chloramphenicol			5	2								
Cephalosporins												
Cefotaxim			5	0								
Fluoroquinolones												
Ciprofloxacin			5	0								
Enrofloxacin			5	0								
Fully sensitive			5	2								
Penicillins												
Ampicillin			5	3								
Quinolones												
Nalidixic acid			5	0								
Resistant to >4 antimicrobials			5	3								
Sulfonamides												
Sulfonamide			5	3								
Tetracyclines												
Tetracyclin			5	3								
Trimethoprim			5	3								

Table Antimicrobial susceptibility testing in S. Uganda

n = Number of resistant isolates		
	S. Uganda	
	Turkeys	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	1
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. Uganda in Turkeys - quantitative data [Diffusion method]

	S. Uganda
	Turkeys
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	1	0																			1											
Streptomycin	11	1	0										1																				
Amphenicols																																	
Chloramphenicol	12	1	0																					1									
Florfenicol	14	1	0																					1									
Cephalosporins																																	
Cefotaxim	14	2	0																					1							1		
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																														1
Enrofloxacin	17	1	0																							1							
Penicillins																																	
Ampicillin	13	1	0																					1									
Quinolones																																	
Nalidixic acid	13	1	0																	1													
Sulfonamides																																	
Sulfonamide	12	1	0																							1							
Tetracyclines																																	
Tetracyclin	14	1	0																			1											
Trimethoprim	10	1	0																							1							

Table Antimicrobial susceptibility testing in S. Virchow

n = Number of resistant isolates		
	S. Virchow	
	Turkeys	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		3
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	3	0
Streptomycin	3	0
Amphenicols		
Chloramphenicol	3	0
Cephalosporins		
Cefotaxim	3	0
Fluoroquinolones		
Ciprofloxacin	3	0
Enrofloxacin	3	0
Fully sensitive	3	3
Penicillins		
Ampicillin	3	0
Quinolones		
Nalidixic acid	3	0
Tetracyclines		
Tetracyclin	3	0
Trimethoprim	3	0

Table Antimicrobial susceptibility testing of S. Virchow in Turkeys - quantitative data [Diffusion method]

	S. Virchow
	Turkeys
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	3

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																														
				<=6	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																		
Gentamicin	12	3	0																			1	2											
Streptomycin	11	3	0										1	2																				
Amphenicols																																		
Chloramphenicol	12	3	0																			1		1	1									
Florfenicol	14	3	0																			1	1	1										
Cephalosporins																																		
Cefotaxim	14	6	0																			1		1	1					2	1			
Fluoroquinolones																																		
Ciprofloxacin	15	3	0																														3	
Enrofloxacin	17	3	0																								2	1						
Penicillins																																		
Ampicillin	13	3	0																			3												
Quinolones																																		
Nalidixic acid	13	3	0																			1	2											
Sulfonamides																																		
Sulfonamide	12	3	0																						1	2								
Tetracyclines																																		
Tetracyclin	14	3	0																			1	2											
Trimethoprim	10	3	0																								3							

Table Antimicrobial susceptibility testing in S. 4,12:i:-

n = Number of resistant isolates	S. 4,12:i:-	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		3
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	3	0
Streptomycin	3	3
Amphenicols		
Chloramphenicol	3	0
Cephalosporins		
Cefotaxim	3	0
Fluoroquinolones		
Ciprofloxacin	3	0
Enrofloxacin	3	0
Penicillins		
Ampicillin	3	3
Quinolones		
Nalidixic acid	3	0
Sulfonamides		
Sulfonamide	3	3
Tetracyclines		
Tetracyclin	3	3
Trimethoprim	3	1

Table Antimicrobial susceptibility testing of S. 4,5,12:i:- in Pigs - quantitative data [Diffusion method]

	S. 4,5,12:i:-
	Pigs
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	4

Antimicrobials:	Break point	N	n	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																													
				<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35
Aminoglycosides																																	
Gentamicin	12	4	0																		1	2	1										
Streptomycin	11	4	4	4																													
Amphenicols																																	
Chloramphenicol	12	4	1	1																	1				1		1						
Florfenicol	14	4	0																1							1	2						
Cephalosporins																																	
Cefotaxim	14	4	0																											1		3	
Cephalothin	14	4	0																		2	1	1										
Fluoroquinolones																																	
Ciprofloxacin	15	4	0																													4	
Enrofloxacin	17	4	0																									1	3				
Penicillins																																	
Ampicillin	13	4	4	4																													
Quinolones																																	
Nalidixic acid	13	4	0																	1	2	1											
Sulfonamides																																	
Sulfonamide	12	4	4	4																													
Tetracyclines																																	
Tetracyclin	14	4	4	4																													
Trimethoprim	10	4	4	4																													

Table Antimicrobial susceptibility testing in S. 4,5,12:i:-

n = Number of resistant isolates	S. 4,5,12:i:-	
	Pigs	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		3
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	4	0
Streptomycin	4	4
Amphenicols		
Chloramphenicol	4	1
Cephalosporins		
Cefotaxim	4	0
Fluoroquinolones		
Ciprofloxacin	4	0
Enrofloxacin	4	0
Penicillins		
Ampicillin	4	4
Quinolones		
Nalidixic acid	4	0
Resistant to >4 antimicrobials	5	4
Sulfonamides		
Sulfonamide	4	4
Tetracyclines		
Tetracyclin	4	4
Trimethoprim	4	4

Table Antimicrobial susceptibility testing of Salmonella in animals

n = Number of resistant isolates

Salmonella spp.

	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		Gallus gallus (fowl) - laying hens		Gallus gallus (fowl) - broilers	
Isolates out of a monitoring programme	no											
Number of isolates available in the laboratory	3											
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides												
Gentamicin	3	0										
Neomycin	3	3										
Cephalosporins												
Ceftiofur	3	3										
Penicillins												
Ampicillin	3	3										
Resistant to 4 antimicrobials	3	1										
Resistant to >4 antimicrobials	3	2										
Tetracyclines												
Tetracyclin	3	3										
Trimethoprim + sulfonamides	3	2										

Table Antimicrobial susceptibility testing of Not typeable in Turkeys - Monitoring - monitoring survey - quantitative data [Diffusion method]

	Not typeable
	Turkeys - Monitoring - monitoring survey
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	1

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																																
	Break point	**N**	**n**	**<=6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**>=35**
Aminoglycosides																																	
Gentamicin	12	1	0																	1													
Streptomycin	11	1	0										1																				
Amphenicols																																	
Chloramphenicol	12	1	0																		1												
Florfenicol	14	1	0																		1												
Cephalosporins																																	
Cephalothin	14	2	0																				1							1			
Fluoroquinolones																																	
Ciprofloxacin	15	1	0																														1
Enrofloxacin	17	1	0																										1				
Penicillins																																	
Ampicillin	13	1	0																			1											
Quinolones																																	
Nalidixic acid	13	1	0																				1										
Sulfonamides																																	
Sulfonamide	12	1	0																						1								
Tetracyclines																																	
Tetracyclin	14	1	0																				1										
Trimethoprim	10	1	0																							1							

Table Antimicrobial susceptibility testing in Not typeable

n = Number of resistant isolates		
	Not typeable	
	Turkeys	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		1
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	1	0
Streptomycin	1	0
Amphenicols		
Chloramphenicol	1	0
Cephalosporins		
Cefotaxim	1	0
Fluoroquinolones		
Ciprofloxacin	1	0
Enrofloxacin	1	0
Fully sensitive	1	0
Penicillins		
Ampicillin	1	0
Quinolones		
Nalidixic acid	1	0
Tetracyclines		
Tetracyclin	1	0
Trimethoprim	1	0

Table Antimicrobial susceptibility testing of S. 4,5:i:- in Pigs - quantitative data [Diffusion method]

S. 4,5:i:-

Pigs

Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	3

Antimicrobials:	Break point	N	n	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																													
				<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35
Aminoglycosides																																	
Gentamicin	12	3	0																		1		2										
Streptomycin	11	3	3	3																													
Amphenicols																																	
Chloramphenicol	12	3	1	1																					1	1							
Florfenicol	14	3	1	1																						1	1						
Cephalosporins																																	
Cefotaxim	14	3	0																														3
Cephalothin	14	3	0																		1	1	1										
Fluoroquinolones																																	
Ciprofloxacin	15	3	0																														3
Enrofloxacin	17	3	0																									1	2				
Penicillins																																	
Ampicillin	13	3	3	3																													
Quinolones																																	
Nalidixic acid	13	3	0																		2	1											
Sulfonamides																																	
Sulfonamide	12	3	3	3																													
Tetracyclines																																	
Tetracyclin	14	3	3	3																													
Trimethoprim	10	3	3	3																													

Table Breakpoints for antibiotic resistance testing in Animals

Test Method Used

Disc diffusion

Standards used for testing

NCCLS

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol							30	18	13	12
Florfenicol							30	19	15	14
Tetracyclines										
Tetracyclin							30	19	15	14
Cephalosporins										
Cephalothin							30	18	15	14
Cefotaxim							30	23	15	14
3rd generation cephalosporins										
Fluoroquinolones										
Ciprofloxacin							5	21	16	15
Enrofloxacin							5	22	18	17
Quinolones										
Nalidixic acid							30	19	14	13
Trimethoprim							5	16	11	10
Sulfonamides										
Sulfonamide							30	17	13	12
Aminoglycosides										
Streptomycin							10	15	12	11
Gentamicin							10	15	13	12
Neomycin										
Kanamycin							30	18	14	13
Trimethoprim + sulfonamides							25	16	11	10
Penicillins										
Ampicillin							10	17	14	13

Table Breakpoints for antibiotic resistance testing in Food

Test Method Used

Disc diffusion

Standards used for testing

NCCLS

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol							30	18	13	12
Florfenicol							30	19	15	14
Tetracyclines										
Tetracyclin							30	19	15	14
Cephalosporins										
Cephalothin							30	18	15	14
Cefotaxim							30	23	15	14
3rd generation cephalosporins										
Fluoroquinolones										
Ciprofloxacin							5	21	16	15
Enrofloxacin							5	22	18	17
Quinolones										
Nalidixic acid							30	19	14	13
Trimethoprim							5	16	11	10
Sulfonamides										
Sulfonamide							30	17	13	12
Aminoglycosides										
Streptomycin							10	15	12	11
Gentamicin							10	15	13	12
Neomycin										
Kanamycin							30	18	14	13
Trimethoprim + sulfonamides							25	16	11	10
Penicillins										
Ampicillin							10	17	14	13

Table Breakpoints for antibiotic resistance testing in Humans

Test Method Used

Disc diffusion

Standards used for testing

NCCLS

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol							30	18	13	12
Florfenicol							30	19	15	14
Tetracyclines										
Tetracyclin							30	19	15	14
Cephalosporins										
Cephalothin							30	18	15	14
Cefotaxim							30	23	15	14
3rd generation cephalosporins										
Fluoroquinolones										
Ciprofloxacin							5	21	16	15
Enrofloxacin							5	22	18	17
Quinolones										
Nalidixic acid							30	19	14	13
Trimethoprim							5	16	11	10
Sulfonamides										
Sulfonamide							30	17	13	12
Aminoglycosides										
Streptomycin							10	15	12	11
Gentamicin							10	15	13	12
Neomycin										
Kanamycin							30	18	14	13
Trimethoprim + sulfonamides							25	16	11	10
Penicillins										
Ampicillin							10	17	14	13

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
AFFECTED SPECIES: Animals / Contaminated Food
Surveillance system
There is no official National program for animals and food. Sporadic samples are collected and examined, especially from sheep (aborted fetus in the field) and broilers (at slaughterhouse).
Results of monitoring
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. Campylobacter in foodstuffs

2.2.4. Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified	C. fetus
Sheep	national vet lab	animal	70	2						2

Footnote

clinical cases: abortions and fetus tested

2.2.5. Antimicrobial resistance in Campylobacter isolates

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

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 unit	Sample weight	Units tested	Total units positive for L.monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/ g	L. monocytogenes > 100 cfu/ g
Milk, cows'										
raw										
intended for direct human consumption		single	25 ml	17	0	17	0			
Cheeses made from sheep's milk										
hard										
made from pasteurised milk										
- at processing plant		single	25 gr	186	0	186	0			
- at retail		single	25 gr	97	1	97	1			
Dairy products (excluding cheeses)										
butter										
- at processing plant		single	25 gr	5	0	5	0			
- at retail		single	25 gr	146	0	146	0			

Footnote

ISO 11290 / 1997 Official sampling

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/ g	L. monocytogenes > 100 cfu/ g
Meat from broilers (Gallus gallus)										
meat products										
cooked, ready-to-eat										
- at processing plant		single	25 gr	3	1	3	1			
- at retail		single	25 gr	43	6	43	6	6	6	
Meat from pig										
meat products										
cooked, ready-to-eat										
- at processing plant		single	25 gr	62	0	62	0			
- at retail		single	25 gr	29	6	29	6			
Meat from bovine animals										
meat products										
cooked, ready-to-eat										
- at processing plant		single	25 gr	10	0	10	0			
- at retail		single	25 gr	31	1	31	1			
Molluscan shellfish										
cooked										
- at retail		single	25 gr	27	1	27	1			
Other processed food products and prepared dishes										
sandwiches										
- at retail - Monitoring - official sampling		single	25 gr	28	0	28	0			
unspecified										
- at retail - Monitoring - official sampling		single	25 gr	157	1	157	1	1	1	

2.3.4. Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria spp.	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals)	NVL	animal	4	0		
Sheep		animal	35	0		
Goats		animal	30	3	3	
Ostriches		animal	1	0		

Footnote

NVL : National Veterinary Lab
Targeted sampling, clinical cases , brain tested

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

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

2.4.3. Escherichia coli, pathogenic in foodstuffs

2.4.4. Escherichia coli, pathogenic in animals

Table VT E. coli in animals

	Source of information	Sampling unit	Sample weight	Units tested	Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified

Footnote

Results from national vet labs. Routine examination, not random targeted sampling. Refer only to E.Coli spp and not to VTEC

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

DISEASE/ AGENT: Tuberculosis, Mycobacterium bovis
AFFECTED SPECIES: Animals, Bovines
Susceptible population
682.507 animals raised in 27.785 herds.
Surveillance system
Eradication program for bovine tuberculosis.
Method used
Registration and marking 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 (2006) as the herd prevalence increased from 1,37% (2006) to 1,46% (2007). The herd incidence rate simillary increased from 0,71% (2006) to 0,81% (2007). The 2007 animal prevalence (0,53%) recorded slightly lower than the previous year 2006 (0,72%). 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 herds and animals under the programme, 102 positive herds with 7.972 animals were reported at the end of 2007. However, following epidemiological analysis for each nomos, 2.608 herds were reported as officially suspended health status in 2007 compared to 4.171 herds reported in 2006. In addition, the number of unknown health status herds reduced from last (2006) to current year (2007) from 2434 herds to 1861 respectevely.
The large 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 programme at local level.
In general, the epidemiological situation in 2007 remained steady in comparison with 2006 epidemiological figures reflecting the overall progress of the programme. Furthermore, 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 , tracing the infected farms after identifying TB lesions at slaughterhouse and properly implementing the program respecting the appropriate timetable between the checks will be urgently addressed in order to meet the eradication targets of Bovine Tuberculosis 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 included the previous co-financed prefectures.

Additional information

Summary results of the investigations for the year 2007
• Number of herds under the programme (official control): 23.931
• Number of animals under the programme (official control: 591.822
• Number of herds tested by tuberculin test: 8.017
• Number of herds positive: 117
• Number of new herds positive : 65
• Number of animals tested by tuberculin test: 190.276
• Number of animals as positive reactors: 1.070
• Total number of animals slaughtered: 1.029
• Number of TB positive animals-reactors slaughtered: 1.028

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 – 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

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
GREECE	27447	23931	8017	117	65	3	2.564	33.5	1.459	0.811
Total	27447	23931	8017	117	65	3	2.564	33.5	1.459	0.811
Total - 1										

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

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
GREECE	682507	591822	201131	190276	1070	1028	1029	33.985	0.532
Total	682507	591822	201131	190276	1070	1028	1029	33.985	0.532
Total - 1									

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

Region	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							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
GREECE	23931	591822	1861	59415	102	7972	314	6545	2608	64003			19046	453887
Total	23931	591822	1861	59415	102	7972	314	6545	2608	64003	0	0	19046	453887
Total - 1														

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: Brucellosis
AFFECTED SPECIES: Animals, Bovines
Susceptible population
617.152 animals, in 27.447 herds.
Surveillance system
Eradication program for bovine brucellosis.
Method used
Registration and marking 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 2007 were prepared alongside the table of the herd health status according to the epidemiological situation at the end of the year 2007 in the whole country.
The reported average annual prevalence and incidence rates for Bovine Brucellosis at herd level were 3,42% and 1,75% respectively.
From 19.399 reported herds under the program, 8.070 herds were tested and 276 herds were found infected (period herd prevalence: 3,42%). From the positive herds, 141 were new cases (incidence: 1,75%). Among 410.935 animals under the program, 257.437 (95.170 individually blood tested) were tested and 2.464 disease-positive reactors were recorded.
Concerning the epidemiological situation at the end of the year, 219 herds were classified as infected herds, 439 herds have never been investigated and remained in the unknown health status,365 herds tested negative and 15.626 herds were reported as officially free. Additionally, in 2.585 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.
Variations have been recorded on the evolution of bovine Brucellosis for the year 2007. The 2007 period herd prevalence rate reported higher (3,42%) in comparison with to the previous year (2,89% / 2006). The estimated herd incidence rate reduced from 1,93 % (2006) to 1,75% (2007). The 2007 animal prevalence (0,96%) reported lower in comparison with the previous year. 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 2007 has slightly improved compared to 2006, Bovine Brucellosis infection 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 included the co-financed prefectures. The implementation of bovine brucellosis eradication program influences the public health relevance of this zoonotic disease.
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

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 Bovine Brucellosis Prevalence, 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.
At the end of the year 2007 based on records at prefectural level (Nomos: Thessaloniki) 14.281 animals were vaccinated with RB 51 raised in 165 herds.
Summary Epidemiological and Statistical Data on the evolution of 2007 Bovine Brucellosis Programme are presented in the Reporting Tables of EFSA web-based zoonoses system.

Additional information

Summary results of the investigations in the year 2007
•Number of herds under the programme (official control): 19.399
•Number of animals under the programme (official control): 410.935
•Number of herds tested: 8.070
•Number of herds positive: 276

•Number of new herds positive: 141
•Number of animals tested: 257.437
•Number of animals tested individually: 95.170
•Number of animals positive: 2466
•Total number of animals slaughtered: 3.045
•Number of Brucella positive animals slaughtered: 2.559

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 – 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 foodstuffs

2.6.4. 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 PROGRAM 800
ANIMALS UNDER THE PROGRAM 42.445
VACCINATED HERDS 141
ANIMALS IN VACCINATED HERDS 10.295
VACCINATED ANIMALS 8.203
CUMULATIVE HERD COVERAGE AT THE END OF THE YEAR 2005 42%
ANIMAL COVERAGE IN VACCINATED HERDS 80 %
CUMULATIVE ANIMAL VACCINATION COVERAGE AT THE END OF THE YEAR 2005 45%

B. Brucella melitensis in sheep

Results of the investigation

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

Epidemiological and Technical evaluation
Introduction
The 2007 ovine and caprine Brucellosis control and eradication programme was implemented in mainland and islands of Greece. The program was approved and co-financed by the E.U. based on the Decision 2006/ 875/ EC . Greece is divided in 54 prefectures - Nomos. For the implementation of brucellosis control and eradication programme the country is divided in two parts in which different policies and measures are applied, the control strategy (mass vaccination of young and adult female small ruminants) and the eradication policy based on test and slaughter of positive reactors receptively.
EPIDEMIOLOGICAL SITUATION IN THE MAINLAND – DATA ANALYSIS
Mass vaccination carried out in the Mainland. During 2007, based on vaccination records, 1.141.766 sheep and goats derived from 27.600 flocks were vaccinated in accordance with the sum of validated data as extracted from the computerized management system which receives reports for vaccination applications on daily basis. Further analysis and detailed statistics (flock and animal vaccination data, follow –up and up to date flock & animal coverage) are available through the central data base of the

specific computerized system for monitoring and recording sheep and goat vaccination activities at national level (mainland).
EPIDEMIOLOGICAL SITUATION IN THE ISLANDS – DATA ANALYSIS
In the islands (eradication zone), except Evia, Lesvos and Leros, the 2007 flock and animal prevalence of brucellosis in tested sheep and goats was reported lower (3,04 % and 0,34%) from last year 4,66 % and 0,86% respectively. The islands of Lesvos and Leros have been excluded from the eradication policy and belong to the mainland programme status.
The high 2007 Brucella Melitensis flock prevalence rate within eradication zone is mainly due to the significant increase of positive reactors reported from the regions Hraklio, Lasithi, Kefalinia and Pireas following the trend of the same animal health status as observed the previous reporting year (2006).
BOVINE VACCINATION WITH REV 1 VACCINE
As an additional preventive measure under the existing control brucellosis programme for sheep and goats, free-ranged 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.

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

RESULTS FROM THE 2007 B. MELITENSIS VACCINATION PROGRAMME
TOTAL : COMPUTERIZED RECORDS / CENTRAL DATA BASE + DATA FILES RECORDS AT REGIONAL LEVEL (VETERINARY DIRECTORATES IN PREFECTURES)
Vaccinated Flocks: 27.600
Vaccinated sheep & Goats: 1.141.766
GENERAL INFO
DISEASE/ AGENT:Brucellosis , Brucella melitensis
AFFECTED SPECIES: Animals, Ovine and caprine
Susceptible population (Data 2007 / Directorate of Animal Health , MRDF)
14.403.503 sheep and Goats, in 124.713 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.
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 mass 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 based on test and slaughter policy.

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

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
GREECE	27447	19399	8070	276	141	24	8.696	41.6	3.42	1.747
Total	27447	19399	8070	276	141	24	8.696	41.6	3.42	1.747
Total - 1										

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

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
GREECE	676152	410935	257437	95170	2464	2559	3045	62.647	0.957
Total	676152	410935	257437	95170	2464	2559	3045	62.647	0.957
Total - 1									

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

Region	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							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
GREECE	19399	410935	439	10489	219	18422	365	5410	2585	29643	165	14281	15626	332690
Total	19399	410935	439	10489	219	18422	365	5410	2585	29643	165	14281	15626	332690
Total - 1														

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

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
GREECE	22985	18141	1119	34	5	1	2.941	6.168	3.038	0.447
Total	22985	18141	1119	34	5	1	2.941	6.168	3.038	0.447
Total - 1										

Footnote

Reported data cover the brucella eradication programme in islands only (eradication zone). In the mainland a mass vaccination programme in sheep and goats is carried out and non included in this reporting table

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

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
GREECE	3780835	2157950	82565	82565	284	267	773	3.826	0.344
Total	3780835	2157950	82565	82565	284	267	773	3.826	0.344
Total - 1									

Footnote

Reported data cover the brucella eradication programme in islands only (eradication zone). In the mainland a mass vaccination programme in sheep and goats is carried out and non included in this reporting table

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

Region	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							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
GREECE	18141	2157950	2022	318154	40	10862	2751	300646	4107	695741			9221	832547
Total	18141	2157950	2022	318154	40	10862	2751	300646	4107	695741	0	0	9221	832547
Total - 1														

Footnote

Reported data cover the brucella eradication programme in islands only (eradication zone). In the mainland a mass vaccination programme in sheep and goats is carried out and non included in this reporting table

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 are available at central level (competent authorities) from animal and Food.

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

2.7.3. Yersinia in foodstuffs

2.7.4. Yersinia in animals

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: Trichinella spirallis
AFFECTED SPECIES: Animals
Susceptible population
All 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 method referred to the digestion in artificial gastric juice of muscle tissues from Trichinella prediction sites, followed by the microscopic examination of the deposit for the larvae. The second covers the examination of tissues from diaphragm using the trichinoscope. New Commmunity legislation covering diagnostics techniques and sampling methods from the target species (swine) has recently adopted by the EU and is expected to be integrated in the forecoming monitoring schemes for Trichinella in Member- States.
Epidemiological history
No positive findings were reported among the samples, which were examined in slaughterhouses.
Results of monitoring
Data are presented in the relevant tables 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 unit	Units tested	Total units positive for Trichinella spp.	T. spiralis	Trichinella spp., unspecified
Pigs	slaughterhouse	animal	323014	0		
breeding animals						
unspecified						
sows and boars		animal	28022	0		
Wild boars						
farmed		animal	1236	0		
All animals						
- at game handling establishment		animal	9	0		

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: Animals
Susceptible population
All animals eligible for slaughter at country level.
Surveillance system
Meat Inspection for all carcasses at the slaughterhouses.
Preventive treatment of all owned dogs with antiparasitic tablets.
Method used
For farmed animals , meat inspection of carcasses at slaughterhouses. For
dogs the arecolin test applied in the past years and for humans X-ray, echo and serological investigation performed.
Epidemiological history
The infection among the owned dogs has been almost disappeared due to systematic preventive treatment of animals with antiparasitic medicine. The infection in stray dogs is unknown. The overall infection in farm animals is decreasing over time.
Results of monitoring
Data 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 food (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 unit	Units tested	Total units positive for Echinococcus spp.	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)	inspection at slaughterhouse	animal	314471	4535			4535
Sheep		animal	2022024	79157			79157
Goats		animal	747284	14542			14542
Pigs		animal	1042330	49			49

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
Toxoplasma gondii is dedected in Sheep and Goats tested under national Surveys. The laboratory method used for the year 2007 was the IFAT (Indirect Immunofluoresence Antibody test) for detecting Toxoplasma antibodies in blood sera. The sampling was not random and derived from sheep and goats flocks with reported abortions.
Results of monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring

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.

2.10.3. Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Sheep	National Reference Lab	animal	602	251	251

Footnote

Lab method for detecting toxoplasma: IFAT (indirect Immunofluoresence Antibody Test)

2.11. RABIES

2.11.1. General evaluation of the national situation

A. Rabies general evaluation

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 while in wildlife (fox) in 1974 and in domestic animal (dog) in 1987 (8,9). Rabies vaccine is incorporated to the standard vaccination programme as much for dogs as for cats. However, the disease is present in neighbouring countries. Although rabies is a very rare disease in the EU, a risk of resurgence does exist, especially through the cross- border movements of rabid animals
The disease is notifiable on 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 for further rabies diagnostic examinations.
Results of monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.11.2. Lyssavirus (rabies) in animals

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Unspecified Lyssavirus	European Bat Lyssavirus - unspecified	Classical rabies virus (genotype 1)
Dogs	National Reference Lab in Athens	animal	14	0			
Cats		animal	3	0			
Bats							
wild		animal	1	0			
Foxes							
wild		animal	1	0			
Hamsters		animal	1	0			
Mice		animal	1	0			

Footnote

Type of sampling: Animal brain
In addition serology performed for Rabies antibodies title in blood sera of 1193 dogs and cuts for moving and transport purposes in accordance with Community and National Registration

2.12. Q-FEVER

2.12.1. General evaluation of the national situation

2.12.2. 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 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:
Year 2001 2002 2003 2004 2005 2006
28 17 1 8 7 7
Source: MRDF (Hellenic Ministry of Rural Development and Food)

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Sheep	national reference lab / blood sera	single	202	41	41
Goats	national reference lab / blood sera	single	114	17	17

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1. ENTEROCOCCUS, NON-PATHOGENIC

3.1.1. General evaluation of the national situation

3.1.2. Antimicrobial resistance in Enterococcus, non-pathogenic isolates

3.2. ESCHERICHIA COLI, NON-PATHOGENIC

3.2.1. General evaluation of the national situation

A. Escherichia coli general evaluation

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

DISEASE/ AGENT: E.coli
AFFECTED SPECIES: Animals, Food
Surveillance system
There is no official National program in force. Nevertheless some laboratories are using standard techniques for E.coli. detection, isolation and strain identification.
Results of investigations in the year 2007
E.coli spp was detected in animals
Very few Positive E.coli samples were detected in animals (sheep and pigs) but not reported under the reporting tables for VTEC.
Results of investigation in the year 2006
E.coli spp was detected in animals and food. Analytical data are presented in relevant reported tables on the EFSA Web system. Positive samples were detected in various categories of meat and fish products.

3.2.2. Antimicrobial resistance in Escherichia coli, non-pathogenic isolates

Table Antimicrobial susceptibility testing of E. coli in animals

n = Number of resistant isolates	E. coli													
	Rabbits		**Sheep**		**Cattle (bovine animals)**		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**		**Goats**	
Isolates out of a monitoring programme		no		no		no		no						no
Number of isolates available in the laboratory		3		33		85		3						15
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides														
Gentamicin	3	1	33	23	85	41	3	3					15	10
Streptomycin	3	3	33	28	85	85	3	3					15	14
Cephalosporins														
Cefoperazone	3	2	33	14	85	48	3	1					15	8
Fluoroquinolones														
Enrofloxacin	3	1	33	19	85	55	3	1					15	8
Penicillins														
Ampicillin					85	85	3	3						
Quinolones														
Nalidixic acid	3	2	33	23	85	75	3	3					15	12
Resistant to 2 antimicrobials													15	1
Resistant to 3 antimicrobials			33	6										
Resistant to 4 antimicrobials	3	1	33	6	85	1							15	1
Resistant to >4 antimicrobials	3	2	33	21	85	84	3	3					15	13
Tetracyclines														
Tetracyclin	3	3	33	33	85	83	3	2					15	15
Trimethoprim + sulfonamides	3	2	33	28	85	80	3	1					15	14

Table Breakpoints used for antimicrobial susceptibility testing in Animals

Test Method Used

Disc diffusion

Standards used for testing

NCCLS

Escherichia coli, non-pathogenic	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol										
Florfenicol										
Tetracyclines										
Tetracyclin							30	19	15	14
Fluoroquinolones										
Ciprofloxacin										
Enrofloxacin							5	22	19	18
Quinolones										
Nalidixic acid							30	19	14	13
Trimethoprim										
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin							10	15	12	11
Gentamicin							10	15	13	12
Neomycin										
Kanamycin										
Trimethoprim + sulfonamides							25	16	11	10
Cephalosporins										
3rd generation cephalosporins										
Cefoperazone							75	21	16	15
Penicillins										
Ampicillin							10	17	14	13

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1. HISTAMINE

4.1.1. 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. Targeted fish species for detecting Histamine are: Scrombridae, Engraulidae, Coryfenidae, Pomatomidae and Scrombresosidae.
Results of monitoring
Data are presented in the relevant table of EFSA web based electronic system for zoonoses monitoring.

4.1.2. Histamine in foodstuffs

Table Histamine in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units in non- conformity	<= 100 mg/ kg	>100 - <= 200 mg/ kg	>200 - <= 400 mg/ kg	> 400 mg/ kg
Fish									
Fishery products from fish species associated with a high amount of histidine - not enzyme maturated	lab results	single	5 gr	10	0				

Footnote

Lab tests cover the fish species: Scombridae, Clupeidae, Engraulidae, Coryfenidae,Pomatomidae, Scombresosidae.

4.2. ENTEROBACTER SAKAZAKII

4.2.1. General evaluation of the national situation

4.2.2. Enterobacter sakazakii in foodstuffs

4.3. STAPHYLOCOCCAL ENTEROTOXINS

4.3.1. General evaluation of the national situation

4.3.2. Staphylococcal enterotoxins in foodstuffs

5. FOODBORNE OUTBREAKS

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

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

Food borne outbreaks in humans. Reporting Year: 2007

In 2007, 55 possible food borne outbreaks were reported under the standard food borne investigation procedure and protocols. None of them fulfilled the recently formed definition of verified outbreak and that is why their epidemiological characteristics are not presented in detail.

However, there are available data regarding each one of these outbreaks as a result of the epidemiological, microbiological and environmental investigation conducted. Salmonella spp. was the predominant etiologic agent for the majority of the reported food borne outbreaks with Salmonella enteritidis the most frequently identified serotype. This is a finding compatible to previous years.

It also seems that foodborne viruses are increasingly detected as causes of outbreaks in Greece.

Almost one third of the outbreaks concerned only one household and the most frequently implicated foodstuff was raw eggs / products containing raw eggs.

Foodborne Outbreaks: summarized data

	Total number of outbreaks	Number of possible outbreaks	Number of verified outbreaks
Bacillus	0	0	0
Campylobacter	0	0	0
Clostridium	0	0	0
Escherichia coli, pathogenic	2	2	0
Foodborne viruses	7	7	0
Listeria	0	0	0
Other agents	2	2	0
Parasites	0	0	0
Salmonella	29	29	0
Staphylococcus	0	0	0
Unknown	15	15	0
Yersinia	0	0	0