European Food Safety Authority

ZOONOSES MONITORING

GREECE

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

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

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

IN 2009

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Greece

Reporting Year:

PREFACE

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

The report contains information on trends and sources of zoonoses and zoonotic agents in Greece during the year 2009 .

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

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

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

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

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

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1. ANIMAL POPULATIONS

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

A. Information on susceptible animal population

Sources of information

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

Source of information: Internal Data Base computerized system of Hellenic Ministry of Agriculture (update 2009). These statistics may vary from other national or E.U. sources of animal population records.

Table Susceptible animal populations

* Only if different than current reporting year

		Livestock numbers (live animals)		Number of herds or flocks		Number of holdings		Number of slaughtered animals		Livestock numbers (live animals)
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*	Data
Cattle (bovine animals)	meat production animals			14688						388306
	mixed herds			5654				169202		272184
	dairy cows and heifers			14466				25794		215609
	calves (under 1 year)			29				57378		35842
	- in total			34883				252374		911941
Deer	farmed - in total			53						1652
Ducks	- in total			2023				52428		18303
Gallus gallus (fowl)	mixed flocks/holdings			521				6882077		7768239
	parent breeding flocks, unspecified - in total			38						
	parent breeding flocks for egg production line			17						232844
	breeding flocks for egg production line - in total			0						0
	broilers			7384				109200845		87503078
	laying hens			650				2699640		8367800

Table Susceptible animal populations

		Livestock numbers (live animals)		Number of herds or flocks		Number of holdings		Number of slaughtered animals		Livestock numbers (live animals)
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*	Data
Gallus gallus (fowl)	breeding flocks for meat production line - in total			0						0
	parent breeding flocks for meat production line			349						1963632
	- in total			8959				118782502		105835593
Gallus gallus (fowl) - broilers	broilers - during rearing period - at farm [1)]									0
Geese	- in total			1087				17690		8794
Goats	animals over 1 year							521927		
	animals under 1 year							3208763		
	- in total			18454				3730690		3561634
Pigs	breeding animals									151013
	fattening pigs									1977969
	- in total			6053				1860183		2140847
Sheep	animals over 1 year							521927		
	animals under 1 year (lambs)							3208763		
	- in total			18454				3730690		3561634

Table Susceptible animal populations

		Livestock numbers (live animals)		Number of herds or flocks		Number of holdings		Number of slaughtered animals		Livestock numbers (live animals)
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*	Data
Solipeds, domestic	horses - in total			21921						42028
Turkeys	parent breeding flocks			11						12700
	meat production flocks			95						330500
	- in total			106				375858		343200
Wild boars	farmed - in total									11915
Fur animals	- in total			14						
Sheep and goats	- in total			51340						
Birds	- in total [2)]			455						
Dogs	- in total			77414						
Cats	- in total			60478						
Birds	- in total [3)]									
	- in total [4)]									
Guinea fowl	- in total							4030		
Pigeons	- in total							205570		

Table Susceptible animal populations

		Livestock numbers (live animals)		Number of herds or flocks		Number of holdings		Number of slaughtered animals		Livestock numbers (live animals)
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*	Data
Birds	- in total [5)]									
Dogs	- in total	295627								
Cats	- in total	223827								
Birds	- in total [6)]	27786								
Sheep and goats	- in total	6134768								
Birds	- in total [7)]									
	[8)]									
Sheep and goats	- in total					51340				
Birds	- in total [9)]									
Rabbits	farmed			11047						
Ostriches	farmed			119				2514		
Rabbits	farmed							2360271		340852
Ostriches	farmed	7007								
Other animals	unspecified			8318				272100		298579

Table Susceptible animal populations

		Livestock numbers (live animals)	Number of holdings	
Animal species	Category of animals	Year*	Data	Year*
Cattle (bovine animals)	meat production animals		14688	
	mixed herds		5654	
	dairy cows and heifers		14466	
	calves (under 1 year)			
	- in total		34883	
Deer	farmed - in total			
Ducks	- in total			
Gallus gallus (fowl)	mixed flocks/holdings			
	parent breeding flocks, unspecified - in total			
	parent breeding flocks for egg production line		7	
	breeding flocks for egg production line - in total		0	
	broilers		994	
	laying hens		354	
	breeding flocks for meat production line - in total		0	

Table Susceptible animal populations

		Livestock numbers (live animals)	Number of holdings	
Animal species	Category of animals	Year*	Data	Year*
Gallus gallus (fowl)	parent breeding flocks for meat production line		84	
	- in total		1439	
Gallus gallus (fowl) - broilers	broilers - during rearing period - at farm [1)]	2007		
Geese	- in total			
Goats	animals over 1 year			
	animals under 1 year			
	- in total		18454	
Pigs	breeding animals			
	fattening pigs			
	- in total		6053	
Sheep	animals over 1 year			
	animals under 1 year (lambs)			
	- in total		18454	
Solipeds, domestic	horses - in total			

Table Susceptible animal populations

		Livestock numbers (live animals)	Number of holdings	
Animal species	Category of animals	Year*	Data	Year*
Turkeys	parent breeding flocks		7	
	meat production flocks		69	
	- in total		76	
Wild boars	farmed - in total			
Fur animals	- in total			
Sheep and goats	- in total			
Birds	- in total [2)]			
Dogs	- in total			
Cats	- in total			
Birds	- in total [3)]			
	- in total [4)]			
Guinea fowl	- in total			
Pigeons	- in total			
Birds	- in total [5)]			

Table Susceptible animal populations

		Livestock numbers (live animals)	Number of holdings	
Animal species	Category of animals	Year*	Data	Year*
Dogs	- in total			
Cats	- in total			
Birds	- in total [6)]			
Sheep and goats	- in total			
Birds	- in total [7)]			
	[8)]			
Sheep and goats	- in total			
Birds	- in total [9)]			
Rabbits	farmed			
Ostriches	farmed			
Rabbits	farmed			
Ostriches	farmed			
Other animals	unspecified			

Comments:

[1)] bilogical

Table Susceptible animal populations

[9] exotic birds
[9] exotic birds
[9] exotic birds
[9] exotic birds
[9] exotic birds
[9] exotic birds
[9] exotic birds
[9] exotic birds

2. INFORMATION ON SPECIFIC ZOONOSES AND ZOONOTIC AGENTS

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

2.1 SALMONELLOSIS

2.1.1 General evaluation of the national situation

A. General evaluation

History of the disease and/or infection in the country

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

Surveillance system
The latest legal provisions and relevant requirements (new zoonoses Directive and Regulation) have changed the existing monitoring situation and management practices in the field of Salmonella surveillance. New strategies and schemes for monitoring Salmonella agents are in force in accordance with Community targets approved. Rapid adaptation and compliance on the new mandatory EU Salmonella control and eradication programmes were observed in all EU member states.

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

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

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

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

DISEASE/AGENT: Salmonella/ Salmonella serovars
TARGET OF MONITORING: Contaminated Food
Surveillance system
Routine examination and selective official sampling at retail level, processing plan and slaughterhouse carried out based on National and Community legislation.
Method used
The ISO 6579 (2002) is used for the detection of Salmonella in food.
The Salmonella serotyping was performed by the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur)
Summary National Report (Reporting Year: 2009). Official and selective sampling – Routine monitoring

1. Broiler meat and products thereof (all categories)
Samples tested: 185
Samples positive: 17
Reported serovars : Salmonella spp. unspecified (n=15) , S. Ohio (n=2

2. Pig meat and products thereof (all categories)
Samples tested: 761
Samples positive: 14
Reported serovars : S. Typhimurium (n=3), S. Ohio (n=1), Salmonella spp. unspecified (n=5), S.Enterica (n=5)

3. Bovine meat and products thereof (all categories)
Samples tested: 45
Samples positive: 4
Reported serovars : S. Typhimurium (n=3), S.Bredeney (n=1)

4. Meat from other animals and products thereof (all categories)
Samples tested: 35
Samples positive: 0

5. Milk and milk products (all categories)
Samples tested: 929
Samples positive: 2
Reported serovars : Salmonella spp. unspecified (n=2)

6. Eggs and egg products(all categories)
Samples tested: 193
Samples positive: 0

7. Fish and fish products (all categories)
Samples tested: 139
Samples positive: 5
Reported serovars : Salmonella spp. unspecified (n=5)

8. Other Food (all categories)
Samples tested: 193
Samples positive: 0

2009 Overall Salmonella reported Food Prevalence (for all food categories) = 1,69 % (42/2480*100)
2009 Overall Salmonella reported Food Prevalence at retail level (for all food categories) = 1,29% (17/1310* 100)

Recent actions taken to control the zoonoses

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

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	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Ohio
Meat from broilers (Gallus gallus) - fresh - at slaughterhouse	NVL	Single	10 gr	18	5			5	
Meat from broilers (Gallus gallus) - fresh - at processing plant	NVL	Single	25 gr	15	0				
Meat from broilers (Gallus gallus) - fresh - at retail	NVL	Single	25 gr	17	2				2
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant	NVL	Single	25 gr	98	4			4	
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail	NVL	Single	25 gr	37	6			6	
Meat from broilers (Gallus gallus) - mechanically separated meat (MSM)	NVL	Single	25 gr	11	1			1	

Footnote:

Official sampling - routine monitoring

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney	S. Ohio	S. enterica subsp. enterica
Meat from bovine animals - fresh - at slaughterhouse		---									
Meat from bovine animals - fresh - at processing plant	NVL	Single	25 gr	12	0						
Meat from bovine animals - fresh - at retail	NVL	Single	25 gr	6	0					0	
Meat from bovine animals - mechanically separated meat (MSM) - at processing plant	NVL	Single	25 gr	15	0						
Meat from bovine animals - mechanically separated meat (MSM) - at retail	NVL	Single	25 gr	6	0						
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant	NVL	Single	25 gr	6	4		3		1		
Meat from pig - fresh - at processing plant	NVL	Single	25 gr	73	4		1	3			
Meat from pig - fresh - at retail	NVL	Single	25 gr	61	0						
Meat from pig - meat preparation - intended to be eaten raw - at processing plant	NVL	Single	25 gr	128	5						5
Meat from pig - meat preparation - intended to be eaten raw - at retail	NVL	Single	25 gr	60	0						
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant	NVL	Single	25 gr	95	2		2				
Meat from pig - meat products - raw but intended to be eaten cooked - at retail	NVL	Single	25 gr	239	3			2		1	
Meat from pig - mechanically separated meat (MSM)	NVL	Single	25 gr	95	0						
Meat from sheep - fresh - at processing plant	NVL	Single	25 gr	17	0						

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney	S. Ohio	S. enterica subsp. enterica
Meat from sheep - fresh - at retail	NVL	Single	10 gr	16	0						

Footnote:

Official sampling - routine monitoring

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Eggs - raw material (liquid egg) for egg products	NVL	Single	25 gr	12	0			
Eggs - table eggs - at packing centre	NVL	Single	25 gr	85	0			
Eggs - table eggs - at retail	NVL	Single	25 gr	96	0			
Fishery products, unspecified - at processing plant	NVL	Single	25 gr	20	0			
Fishery products, unspecified - at retail	NVL	Single	25 gr	16	0			
Fruits and vegetables - precut - ready-to-eat	NVL	Single	25 gr	40	0			
Juice - fruit juice - unpasteurised	NVL	Single	25 ml	10	0			
Live bivalve molluscs	NVL	Single	25 gr	86	3			3
Molluscan shellfish - raw - at processing plant		---						
Molluscan shellfish - raw - at retail	NVL	Single	25 gr	17	2			2
Bakery products - at retail	NVL	Single	25 gr	35	0			
Other processed food products and prepared dishes - sandwiches - at retail	NVL	Single	25 gr	88	0			
Ready-to-eat salads - at retail	NVL	Single	25 gr	20	0			

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant	NVL	Single	25 gr	5	0			
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail	NVL	Single	25 gr	30	0			
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant	NVL	Single	25 gr	370	0			
Dairy products (excluding cheeses) - ice-cream - at retail	NVL	Single	25 gr	373	0			
Dairy products (excluding cheeses) - milk powder and whey powder - at retail [1)]	NVL	Single	25 gr	3	0			
Milk, cows' - pasteurised milk - at retail	NVL	Single	25 ml	26	0			
Cheeses made from cows' milk - hard - made from pasteurised milk - at retail	NVL	Single	25 gr	10	2			2
Cheeses made from sheep's milk - hard - made from pasteurised milk	NVL	Single	25 gr	16	0			
Cheeses, made from unspecified milk or other animal milk - unspecified - Monitoring - official sampling - selective sampling	NVL	Single	25 gr	35	0			
Dairy products (excluding cheeses) - dairy products, not specified - ready-to-eat	NVL	Single	25 gr	61	0			

Comments:

[1)] infant milk

2.1.4 Salmonella in animals

A. Salmonella spp. in Gallus Gallus - breeding flocks

Measures in case of the positive findings or single cases

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

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

Notification system in place

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

Susceptible population
Parent breeding stock for egg and meat production line is estimated around 2.196.476 birds / 366 breeding flocks (2009 national zoonoses statistics) raised in 91 holdings.

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

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

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

Results of the investigation

Epidemiological and statistical report

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

Note: n = number of positive flocks

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

Notification system in place

Surveillance system

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

Method used

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

The Salmonella serotyping was performed by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Results of the investigation

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

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

Note: n = number of Salmonella positive flocks

Nineteen (19) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Broilers during the year 2009. Distribution for the most 5 frequent Salmonella serovars in Broilers – production perios is given below:

1. S. Hadar (n= 7)
2. S. Tennesse (n= 2)
3. S. Senftanbe (n = 2)
4. S. Miami (n=2)
5. S.Tennes (n= 2)

Note: n = number of positive flocks

C. Salmonella spp. in bovine animals

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

Epidemiological history

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

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

Additional information

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

Surveillance system

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

Method used

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

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

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

Note: n = number of positive flocks

Table Salmonella in breeding flocks of Gallus gallus

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	Salmonella spp., unspecified
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks	10	PVD	Flock	10	0						
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period	10	PVD	Flock	10	0						
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult	17	PVD	Flock	17	1						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks	63	PVD	Flock	63	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period	81	PVD	Flock	81	1						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult	255	PVD	Flock	255	27	5	13		1		1

	S. Blockley	S. Livingstone	S. Umbilo	S. enterica subsp. enterica
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks				
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period				
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult		1		
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks				

Table Salmonella in breeding flocks of Gallus gallus

	S. Blockley	S. Livingstone	S. Umbilo	S. enterica subsp. enterica
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period		1		
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult		4	1	2

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bovismorbificans	S. Braenderup	S. Bredeney
Gallus gallus (fowl) - laying hens - day-old chicks	103	PVD	Flock	30	0						
Gallus gallus (fowl) - laying hens - during rearing period	149	PVD	Flock	68	0						
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	527	PVD+industry	Flock	327	41	8	3	1	1	2	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry	527	industry	Flock	327	0						
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	527	PVD	Flock	258	41	8	3	1	1	2	1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	7384	PVD	Flock	6577	19						
Turkeys - breeding flocks, unspecified [1)]	11	PVD	Flock	3	0						
Turkeys - meat production flocks [2)]	95	PVD	Flock	5	1			1			
Canary		PVD	Flock	1	0						
Guinea fowl		PVD	Flock	2	0						
Ostriches		PVD	Flock	1	0						
Partridges		PVD	Flock	2	0						
Pigeons		PVD	Flock	2	0						
Poultry, unspecified		PVD	Flock	44	0						

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bovismorbificans	S. Braenderup	S. Bredeney
Turkeys - unspecified		PVD	Flock	19	0						

	S. Carno	S. Corvallis	S. Haardt	S. Hadar	S. Heidelberg	S. Hull	S. Infantis	S. Lexington	S. Livingstone	S. Menden	S. Miami
Gallus gallus (fowl) - laying hens - day-old chicks											
Gallus gallus (fowl) - laying hens - during rearing period											
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	1	4	1	1	2	1	1	1	1	1	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry											
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	1	4	1	1	2	1	1	1	1	1	
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling				7							2
Turkeys - breeding flocks, unspecified [1)]											
Turkeys - meat production flocks [2)]											
Canary											
Guinea fowl											

Table Salmonella in other poultry

	S. Carno	S. Corvallis	S. Haardt	S. Hadar	S. Heidelberg	S. Hull	S. Infantis	S. Lexington	S. Livingstone	S. Menden	S. Miami
Ostriches											
Partridges											
Pigeons											
Poultry, unspecified											
Turkeys - unspecified											

	S. Montevideo	S. Muenchen	S. Newport	S. Oranienburg	S. Rissen	S. Senftenberg	S. Szentes	S. Tennessee	S. Tunis	S. Umbilo	S. Virchow
Gallus gallus (fowl) - laying hens - day-old chicks											
Gallus gallus (fowl) - laying hens - during rearing period											
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	1	1	3	1	1			1			1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry											
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	1	1	3	1	1			1			1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling						2	1	2	2	1	

Table Salmonella in other poultry

	S. Montevideo	S. Muenchen	S. Newport	S. Oranienburg	S. Rissen	S. Senftenberg	S. Szentes	S. Tennessee	S. Tunis	S. Umbilo	S. Virchow
Turkeys - breeding flocks, unspecified [1)]											
Turkeys - meat production flocks [2)]											
Canary											
Guinea fowl											
Ostriches											
Partridges											
Pigeons											
Poultry, unspecified											
Turkeys - unspecified											

	S. Worthington	S. enterica subsp. enterica	S. enterica subsp. salamae
Gallus gallus (fowl) - laying hens - day-old chicks			
Gallus gallus (fowl) - laying hens - during rearing period			
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	1		1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry			

Table Salmonella in other poultry

	S. Worthington	S. enterica subsp. enterica	S. enterica subsp. salamae
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	1		1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling		1	1
Turkeys - breeding flocks, unspecified [1)]			
Turkeys - meat production flocks [2)]			
Canary			
Guinea fowl			
Ostriches			
Partridges			
Pigeons			
Poultry, unspecified			
Turkeys - unspecified			

Comments:

[1)] official sampling
[2)] official sampling

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Dublin
Cattle (bovine animals) - adult cattle over 2 years	PVD	Animal	9	0				
Cattle (bovine animals) - calves (under 1 year)	PVD	Animal	47	1				1
Goats	PVD	Animal	52	1			1	
Pigs	PVD	Animal	1	0				
Pigs - breeding animals	PVD	Animal	4	0				
Pigs - fattening pigs	PVD	Animal	4	0				
Sheep	PVD	Animal	119	1			1	
Solipeds, domestic	PVD	Animal	1	0				
Deer	PVD	Animal	2	0				
Rabbits	PVD	Animal	2	0				
Rats	PVD	Animal	15	0				

Footnote:

Selective sampling,clinical cases, ISO 6579/2002
Sampling details: Animal samples: internal organs - aborted fetues.

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Pet food - dog snacks (pig ears, chewing bones)	NVL	Single	25 gr	50	0			

Footnote:

Routine monitoring - official sampling

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of cereal grain origin - maize [1)]	NVL	Single	25 gr	5	0			

Comments:

[1)] at farm

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of land animal origin - meat and bone meal [1)]	NVL	Single	25 gr	97	0			
Feed material of marine animal origin - fish meal [2)]	NVL	Single	25 gr	65	0			
Feed material of marine animal origin - fish oil [3)]	NVL	Single	25 gr	10	0			
Feed material of marine animal origin - fish silage [4)]	NVL	Single	25 gr	5	0			

Comments:

[1)] at farm
[2)] at farm
[3)] at farm
[4)] at farm

Footnote:

Routine monitoring, ISO 6579/2002, official controls

2.1.6 Salmonella serovars and phagetype distribution

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

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Sheep - Clinical investigations		Turkeys - unspecified	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory		5			221	5					9	
Number of isolates serotyped	0	5	0	0	221	5	0	0	0	0	9	0
Number of isolates per serovar												
S. Bardo											2	
S. Blockley					1						2	
S. Bovismorbificans					1							
S. Braenderup					3							
S. Bredeney					1							
S. Carno					1							

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Sheep - Clinical investigations		Turkeys - unspecified	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory		5			221	5					9	
Number of isolates serotyped	0	5	0	0	221	5	0	0	0	0	9	0
Number of isolates per serovar												
S. Corvallis					5							
S. Dublin		2										
S. Enteritidis					81							
S. Haardt					3							
S. Hadar					42	1					1	
S. Havana					1	1						
S. Heidelberg					2							
S. Hull					1							
S. II 41:z10:z6					1							
S. Infantis					2							
S. Istanbul					1							
S. Lexington					1							

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Sheep - Clinical investigations		Turkeys - unspecified	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory		5			221	5					9	
Number of isolates serotyped	0	5	0	0	221	5	0	0	0	0	9	0
Number of isolates per serovar												
S. Livingstone					19							
S. Manhattan					1							
S. Mbandaka					1							
S. Meleagridis					2							
S. Menden					1							
S. Miami					2							
S. Montevideo					1							
S. Muenchen					1							
S. Newport					6							
S. Oranienburg		1			5							
S. Rissen					6							
S. Senftenberg					2							

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Sheep - Clinical investigations		Turkeys - unspecified	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory		5			221	5					9	
Number of isolates serotyped	0	5	0	0	221	5	0	0	0	0	9	0
Number of isolates per serovar												
S. Szentes					1							
S. Tennessee					5							
S. Typhimurium		2			9	3					2	
S. Umbilo					2							
S. Virchow					1							
S. Worthington					1							
S. enterica subsp. enterica					8						2	

Table Salmonella serovars in food

Serovar	Meat from bovine animals	Meat from pig	Meat from broilers (Gallus gallus)	Meat from other poultry species	Other products of animal origin	Cereals and meals	Cheeses, made from unspecified milk or other animal milk - unspecified - made from pasteurised milk	Live bivalve molluscs
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory	4	18	49			16	3	5
Number of isolates serotyped	4	18	49	0	0	16	3	5
Number of isolates per serovar								
S. Anatum			1			1		1
S. Blockley			4					
S. Bredeney	1		3					
S. Bristol							3	
S. Enteritidis			9					1
S. Hadar			15					
S. Havana			1			3		
S. Infantis			1					

Table Salmonella serovars in food

Serovar	Meat from bovine animals	Meat from pig	Meat from broilers (Gallus gallus)	Meat from other poultry species	Other products of animal origin	Cereals and meals	Cheeses, made from unspecified milk or other animal milk - unspecified - made from pasteurised milk	Live bivalve molluscs
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory	4	18	49			16	3	5
Number of isolates serotyped	4	18	49	0	0	16	3	5
Number of isolates per serovar								
S. Kottbus			1					
S. Liverpool						3		
S. Livingstone			1					
S. London			1					
S. Montevideo			1					
S. Muenster		1	1					
S. Ohio			2					
S. Oranienburg						6		
S. Orion						1		

Table Salmonella serovars in food

Serovar	Meat from bovine animals	Meat from pig	Meat from broilers (Gallus gallus)	Meat from other poultry species	Other products of animal origin	Cereals and meals	Cheeses, made from unspecified milk or other animal milk - unspecified - made from pasteurised milk	Live bivalve molluscs
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory	4	18	49			16	3	5
Number of isolates serotyped	4	18	49	0	0	16	3	5
Number of isolates per serovar								
S. Rissen		3				1		
S. Senftenberg						1		
S. Thompson			2					1
S. Typhimurium	3	8	5					1
S. Weltevreden								1
S. enterica subsp. enterica		6	1					

2.1.7 Antimicrobial resistance in Salmonella isolates

A. Antimicrobial resistance in Salmonella in poultry

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

ANTIMICROBIAL RESISTANCE

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

Additional information

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

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - broilers

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. Hadar		S. I 1,4,5,12:i:2ef		S. II 41:z10:z6		S. Umbilo	
Isolates out of a monitoring program (yes/no)							yes		yes		yes		yes	
Number of isolates available in the laboratory							8		1		1		1	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol							2	1	1	0	1	0	1	0
Fluoroquinolones - Ciprofloxacin							2	2	1	0	1	0	1	0
Quinolones - Nalidixic acid							2	2	1	0	1	0	1	0
Sulfonamides - Sulfonamide									1	1	1	0	1	0
Aminoglycosides - Streptomycin							2	1	1	1	1	0	1	1
Aminoglycosides - Gentamicin									1	0	1	0	1	0
Penicillins - Ampicillin							2	2	1	1	1	0	1	1
Tetracyclines - Tetracycline							2	2	1	1	1	0	1	1
Fully sensitive							2	0	1	0	1	1	1	0
Resistant to 1 antimicrobial							2	0	1	0	1	0	1	0
Resistant to 2 antimicrobials									1	1	1	0	1	0
Resistant to 3 antimicrobials							2	0	1	0	1	0	1	0
Resistant to 4 antimicrobials							2	0	1	1	1	0	1	1
Resistant to >4 antimicrobials							2	2						
Cephalosporins - Cefotaxim									1	0	1	0	1	0

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - laying hens

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. 1,13,23:-:-		S. Rissen		S. Tennessee		S. Worthington	
Isolates out of a monitoring program (yes/no)	yes		yes		yes						yes		yes	
Number of isolates available in the laboratory	32		4						3		1		1	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	11	0	2	0					2	0	1	0	1	0
Fluoroquinolones - Ciprofloxacin	11	6	2	0					2	0	1	0	1	0
Quinolones - Nalidixic acid	11	5	2	0					2	0	1	0	1	0
Trimethoprim	11	0	2	0					2	0	1	0	1	1
Sulfonamides - Sulfonamide	11	0	2	0					2	0	1	0	1	1
Aminoglycosides - Streptomycin	11	0	2	0					2	0	1	0	1	0
Aminoglycosides - Gentamicin	11	0	2	0					2	0	1	0	1	0
Penicillins - Ampicillin	11	0	2	0					2	0	1	0	1	0
Tetracyclines - Tetracycline	11	0	2	0					2	0	1	0	1	1
Fully sensitive	11	5	2	2					2	2	1	1	1	0
Resistant to 1 antimicrobial	11	1												
Resistant to 2 antimicrobials	11	5												
Resistant to 3 antimicrobials													1	1
Cephalosporins - Cefotaxim	11	0	2	0					2	0	1	0	1	0

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Enteritidis	Gallus gallus (fowl) - breeding flocks, unspecified																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	16																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	5	0																							3
Tetracyclines - Tetracycline	13	5	0																	2	1	1	1			
Fluoroquinolones - Ciprofloxacin	21	5	0																							
Quinolones - Nalidixic acid	13	5	0																		3	1	1			
Trimethoprim	10	5	0																							1
Sulfonamides - Sulfonamide	12	5	0																						1	1
Aminoglycosides - Streptomycin	11	5	0													2	2	1								
Aminoglycosides - Gentamicin	19	5	0																			2	2	1		
Penicillins - Ampicillin	13	5	0																		2	3				
Cephalosporins - Cefotaxim	23	5	0																							

S. Enteritidis	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	16						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol	2						
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							5
Quinolones - Nalidixic acid							

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

S. Enteritidis	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	16						
Antimicrobials:	29	30	31	32	33	34	>=35
Trimethoprim	2	2					
Sulfonamides - Sulfonamide	2	1					
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim							5

Table Antimicrobial susceptibility testing of S. Hadar in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Hadar	Gallus gallus (fowl) - breeding flocks, unspecified																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	28																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	7	0																					1		
Amphenicols - Florfenicol	14	6	0																		1					
Tetracyclines - Tetracycline	11	7	7	1	2	4																				
Fluoroquinolones - Ciprofloxacin	21	7	0																							2
Quinolones - Nalidixic acid	13	7	7	7																						
Trimethoprim	10	7	0																							
Sulfonamides - Sulfonamide	12	7	0																		1					
Aminoglycosides - Streptomycin	11	7	0																		1					
Aminoglycosides - Gentamicin	19	5	0																	2	3					
Penicillins - Ampicillin	13	7	7	7																						
Cephalosporins - Cefotaxim	23	7	0																							

S. Hadar	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	28						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol	1	3	1		1		
Amphenicols - Florfenicol	1	3	1				
Tetracyclines - Tetracycline							

Table Antimicrobial susceptibility testing of S. Hadar in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

S. Hadar	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	28						
Antimicrobials:	29	30	31	32	33	34	>=35
Fluoroquinolones - Ciprofloxacin	1	2	1		1		
Quinolones - Nalidixic acid							
Trimethoprim	1	2	2	1	1		
Sulfonamides - Sulfonamide		1	3			2	
Aminoglycosides - Streptomycin	1		3			2	
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim				1	2	2	2

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Typhimurium	Gallus gallus (fowl) - breeding flocks, unspecified																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	1																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0																							1
Amphenicols - Florfenicol	14	1	0																							
Tetracyclines - Tetracycline	11	1	0																			1				
Fluoroquinolones - Ciprofloxacin	21	1	0																							
Quinolones - Nalidixic acid	13	1	0																			1				
Trimethoprim	10	1	0																						1	
Aminoglycosides - Streptomycin	11	1	0											1												
Aminoglycosides - Gentamicin	12	1	0																						1	
Trimethoprim + sulfonamides	10	1	0																					1		
Cephalosporins - Cefotaxim	23	2	0																							
Sulfonamides		1	0																						1	

S. Typhimurium	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Amphenicols - Florfenicol		1					
Tetracyclines - Tetracycline							

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

S. Typhimurium	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Fluoroquinolones - Ciprofloxacin							1
Quinolones - Nalidixic acid							
Trimethoprim							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Trimethoprim + sulfonamides							
Cephalosporins - Cefotaxim							2
Sulfonamides							

Table Antimicrobial susceptibility testing of S. Livingstone in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Livingstone	Gallus gallus (fowl) - breeding flocks, unspecified																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	11																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	5	0																		1		2	2		
Amphenicols - Florfenicol	14	5	0																		1	3	1			
Tetracyclines - Tetracycline	13	5	0																	1	3	1				
Fluoroquinolones - Ciprofloxacin	21	5	0																							
Quinolones - Nalidixic acid	13	5	0																			2	3			
Trimethoprim	10	5	0																							
Sulfonamides - Sulfonamide	12	5	0																				1	2		2
Aminoglycosides - Streptomycin	13	5	0									4	1													
Aminoglycosides - Gentamicin	19	5	0																				1	4		
Penicillins - Ampicillin	13	5	0																				5			
Cephalosporins - Cefotaxim	23	5	0																							

S. Livingstone	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	11						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Amphenicols - Florfenicol							
Tetracyclines - Tetracycline							

Table Antimicrobial susceptibility testing of S. Livingstone in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

S. Livingstone	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	11						
Antimicrobials:	29	30	31	32	33	34	>=35
Fluoroquinolones - Ciprofloxacin							5
Quinolones - Nalidixic acid							
Trimethoprim		2	3				
Sulfonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim				2	1		2

Table Antimicrobial susceptibility testing of S. Carno in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Carno	Gallus gallus (fowl) - breeding flocks, unspecified																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	1																									
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0																							1
Tetracyclines - Tetracycline	13	1	0																	1						
Fluoroquinolones - Ciprofloxacin	21	1	0																							
Quinolones - Nalidixic acid	13	1	0																		1					
Trimethoprim	10	1	0																							
Sulfonamides - Sulfonamide	12	1	0																				1			
Aminoglycosides - Streptomycin	11	1	0														1									
Aminoglycosides - Neomycin	22	1	0																					1		
Penicillins - Ampicillin	13	1	0																					1		
Cephalosporins - Cefotaxim	29	1	0																							

S. Carno	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							1
Quinolones - Nalidixic acid							

Table Antimicrobial susceptibility testing of S. Carno in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

S. Carno	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Trimethoprim		1					
Sulfonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Neomycin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim						1	

Table Antimicrobial susceptibility testing of S. Blockley in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Blockley	Gallus gallus (fowl) - breeding flocks, unspecified																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	2																									
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	1	1																						
Tetracyclines - Tetracycline	13	1	1	1																						
Fluoroquinolones - Ciprofloxacin	21	1	0																							
Quinolones - Nalidixic acid	13	1	1	1																						
Aminoglycosides - Streptomycin	11	1	1	1																						
Aminoglycosides - Gentamicin	19	1	0																					1		
Penicillins - Ampicillin	13	1	0																							

S. Blockley	Gallus gallus (fowl) - breeding flocks, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	2						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin			1				
Quinolones - Nalidixic acid							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							1

Table Antimicrobial susceptibility testing of S. Rissen in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Rissen	Gallus gallus (fowl) - laying hens																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	2	0																						2	
Amphenicols - Florfenicol	14	1	0																							1
Tetracyclines - Tetracycline	13	2	0																2							
Fluoroquinolones - Ciprofloxacin	21	2	0																							
Trimethoprim	10	2	0																							
Sulfonamides - Sulfonamide	12	2	0																							
Aminoglycosides - Streptomycin	11	2	0												2											
Aminoglycosides - Gentamicin	19	2	0																				2			
Penicillins - Ampicillin	13	2	0																				2			

S. Rissen	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	3						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Amphenicols - Florfenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							2
Trimethoprim	2						

Table Antimicrobial susceptibility testing of S. Rissen in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

S. Rissen	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	3						
Antimicrobials:	29	30	31	32	33	34	>=35
Sulfonamides - Sulfonamide	2						
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							

Table Antimicrobial susceptibility testing of S. Tennessee in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Tennessee	Gallus gallus (fowl) - laying hens																								
Isolates out of a monitoring program (yes/no)																									
Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0															1								
Amphenicols - Florfenicol	14	1	0														1									
Tetracyclines - Tetracycline	13	1	0														1									
Fluoroquinolones - Ciprofloxacin	21	1	0																							
Quinolones - Nalidixic acid	13	1	0												1											
Trimethoprim	10	1	0																					1		
Sulfonamides - Sulfonamide	12	1	0																							
Aminoglycosides - Streptomycin	10	1	0									1														
Aminoglycosides - Gentamicin	19	1	0																					1		
Penicillins - Ampicillin	13	1	0														1									
Cephalosporins - Cefotaxim	23	1	0																							

S. Tennessee	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)							
Number of isolates available in the laboratory							
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Amphenicols - Florfenicol							
Tetracyclines - Tetracycline							

Table Antimicrobial susceptibility testing of S. Tennessee in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

S. Tennessee	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)							
Number of isolates available in the laboratory							
Antimicrobials:	29	30	31	32	33	34	>=35
Fluoroquinolones - Ciprofloxacin							1
Quinolones - Nalidixic acid							
Trimethoprim							
Sulfonamides - Sulfonamide		1					
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim					1		

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Enteritidis	Gallus gallus (fowl) - laying hens																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	30																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	6	0																				1	2	1	1
Amphenicols - Florfenicol	14	4	0																					1	1	2
Tetracyclines - Tetracycline	13	6	0																	1		3	2			
Fluoroquinolones - Ciprofloxacin	21	6	0																				1			
Quinolones - Nalidixic acid	24	6	4	4																		2				
Trimethoprim	10	6	0																					1		1
Sulfonamides - Sulfonamide	12	6	0															1		1						1
Aminoglycosides - Streptomycin	13	6	0														3	1				2				
Aminoglycosides - Gentamicin	19	6	0																			2	1	1		2
Penicillins - Ampicillin	13	6	0															1		2		2	1			
Cephalosporins - Cefotaxim	14	6	0																							

S. Enteritidis	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	30						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol	1						
Amphenicols - Florfenicol							
Tetracyclines - Tetracycline							

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

S. Enteritidis	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	30						
Antimicrobials:	29	30	31	32	33	34	>=35
Fluoroquinolones - Ciprofloxacin	1	1		1		1	1
Quinolones - Nalidixic acid							
Trimethoprim	1	2	1				
Sulfonamides - Sulfonamide			3				
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim		1					5

Table Antimicrobial susceptibility testing of S. Oranienburg in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Oranienburg	Gallus gallus (fowl) - laying hens																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0																					1		
Tetracyclines - Tetracycline	11	1	0																	1						
Fluoroquinolones - Ciprofloxacin	21	1	0																							
Quinolones - Nalidixic acid	13	1	0																	1						
Trimethoprim	10	1	0																							
Sulfonamides - Sulfonamide	12	1	0																				1			
Aminoglycosides - Streptomycin	11	1	0															1								
Aminoglycosides - Gentamicin	19	1	0																				1			
Penicillins - Ampicillin	13	1	0																				1			
Cephalosporins - Cefotaxim	23	1	0																							

S. Oranienburg	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	2						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							1
Quinolones - Nalidixic acid							

Table Antimicrobial susceptibility testing of S. Oranienburg in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

S. Oranienburg	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	2						
Antimicrobials:	29	30	31	32	33	34	>=35
Trimethoprim			1				
Sulfonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim							1

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Typhimurium	Gallus gallus (fowl) - laying hens																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	4																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0																						1	
Tetracyclines - Tetracycline	22	1	0																		1					
Fluoroquinolones - Ciprofloxacin	21	1	0																							
Quinolones - Nalidixic acid	13	1	0																				1			
Trimethoprim	10	1	0																							
Sulfonamides - Sulfonamide	12	1	0																							
Aminoglycosides - Streptomycin	11	1	0															1								
Aminoglycosides - Gentamicin	19	1	0																				1			
Penicillins - Ampicillin	13	1	0																				1			
Cephalosporins - Cefotaxim	23	1	0																						1	

S. Typhimurium	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	4						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							1
Quinolones - Nalidixic acid							

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

S. Typhimurium	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	4						
Antimicrobials:	29	30	31	32	33	34	>=35
Trimethoprim				1			
Sulfonamides - Sulfonamide					1		
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim							

Table Antimicrobial susceptibility testing of S. Livingstone in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Livingstone	Gallus gallus (fowl) - laying hens																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0																					1		
Amphenicols - Florfenicol	14	1	0																				1			
Tetracyclines - Tetracycline	13	1	0																		1					
Fluoroquinolones - Ciprofloxacin	21	1	0																							
Quinolones - Nalidixic acid	13	1	0																				1			
Trimethoprim	10	1	0																							
Sulfonamides - Sulfonamide	12	1	0																					1		
Aminoglycosides - Streptomycin	13	1	0										1													
Aminoglycosides - Gentamicin	19	1	0																				1			
Penicillins - Ampicillin	13	1	0																				1			
Cephalosporins - Cefotaxim	23	1	0																							

S. Livingstone	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	3						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Amphenicols - Florfenicol							
Tetracyclines - Tetracycline							

Table Antimicrobial susceptibility testing of S. Livingstone in Gallus gallus (fowl) - laying hens - quantitative data [Diffusion method]

S. Livingstone	Gallus gallus (fowl) - laying hens						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	3						
Antimicrobials:	29	30	31	32	33	34	>=35
Fluoroquinolones - Ciprofloxacin							1
Quinolones - Nalidixic acid							
Trimethoprim		1					
Sulfonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim					1		

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Hadar in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Dilution method]

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

S. Hadar	Gallus gallus (fowl) - breeding flocks, unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	28																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	5	0									4	1										2	64
Tetracyclines - Tetracycline	8	5	5													4	1						2	32
Fluoroquinolones - Ciprofloxacin	0.06	5	5					1	4														0.03	74
Quinolones - Nalidixic acid	16	5	5															5					4	128
Trimethoprim		5	0									5											2	16
Sulfonamides - Sulfonamide	256	5	5														3	2					64	1024
Aminoglycosides - Streptomycin	16	5	2												3		2						4	128
Aminoglycosides - Gentamicin	2	5	0							5														
Aminoglycosides - Neomycin	0																						0.5	16
Penicillins - Ampicillin	4	5	4								1					4							1	32
Cephalosporins - Cefotaxim		5	0				4	1															0.06	8

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Livingstone in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Dilution method]

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

S. Livingstone	Gallus gallus (fowl) - breeding flocks, unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	11																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0										1	1										2	64
Tetracyclines - Tetracycline	8	2	0									2												2	32
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.03	4
Quinolones - Nalidixic acid	16	2	0										1	1										4	128
Trimethoprim	2	2	0									2												2	16
Sulfonamides - Sulfonamide	256	2	2															2						64	1024
Aminoglycosides - Streptomycin	32	2	0											1	1									4	128
Aminoglycosides - Gentamicin	2	2	0							2														0.5	16
Penicillins - Ampicillin	4	2	0								1	1												1	32
Cephalosporins - Cefotaxim	0.5	2	0				1		1															0.06	8

Table Antimicrobial susceptibility testing of S. enterica subsp. enterica in Gallus gallus (fowl) - breeding flocks, unspecified - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Enteritidis	Gallus gallus (fowl) - laying hens																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	30																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	7	0									4	3										2	32
Tetracyclines - Tetracycline	8	7	0									7											2	32
Fluoroquinolones - Ciprofloxacin	0.06	7	3			4		1	1	1													0.03	4
Quinolones - Nalidixic acid	16	7	2										5					2					4	128
Trimethoprim	2	7	0									7											2	16
Sulfonamides - Sulfonamide	256	7	7														5		2				64	1024
Aminoglycosides - Streptomycin	32	7	0										7										4	128
Aminoglycosides - Gentamicin	2	7	0							6	1												0.5	16
Penicillins - Ampicillin	4	7	0								6		1										1	32
Cephalosporins - Cefotaxim	0.5	7	0				4	3															0.06	8

Table Antimicrobial susceptibility testing of S. Oranienburg in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Livingstone in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Braenderup in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Corvallis in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Hull in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Heidelberg in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Infantis in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Manhattan in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Mbandaka in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Mbandaka	Gallus gallus (fowl) - laying hens																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0										1											2	64
Tetracyclines - Tetracycline	8	1	0									1												2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0									1												4	12
Sulfonamides - Sulfonamide	256	1	1														1							2	16
Aminoglycosides - Streptomycin	32	1	0											1										4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	0								1													1	32
Cephalosporins - Cefotaxim	0.5	1	0					1																0.069	8

Table Antimicrobial susceptibility testing of S. Tennessee in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

Table Antimicrobial susceptibility testing of S. Worthington in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Worthington	Gallus gallus (fowl) - laying hens																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	21	1	0										1											2	64
Tetracyclines - Tetracycline	20	1	1													1								2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0												1									4	128
Sulfonamides - Sulfonamide	256	1	1																		1			64	1024
Aminoglycosides - Streptomycin	32	1	0												1									4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	0								1													1	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	8

Table Antimicrobial susceptibility testing of S. enterica subsp. salamae in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

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

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

Test Method Used	Standard methods used for testing
Disc diffusion Broth dilution	NCCLS/CLSI Eucast/EFSA

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	Eucast/EFSA	16	12
	Florfenicol	Eucast/EFSA		14
Tetracyclines	Tetracycline	Eucast/EFSA	8	14
Fluoroquinolones	Ciprofloxacin	Eucast/EFSA	0.06	21
Quinolones	Nalidixic acid	Eucast/EFSA	16	15
Trimethoprim	Trimethoprim	Eucast/EFSA	2	10
Sulfonamides	Sulfonamide	Eucast/EFSA		12
	Sulfonamides		256	
Aminoglycosides	Streptomycin	Eucast/EFSA	32	10
	Gentamicin	Eucast/EFSA	2	12
Cephalosporins	Cefotaxim		0.5	23
Penicillins	Ampicillin	Eucast/EFSA	4	13

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

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

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

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

Results of 2009 zoonoses monitoring

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

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

2.2.2 Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

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

DISEASE/AGENT: Cambylobacteriosis
AFFECTED SPECIES: Human

Results of the investigations in the year 2006

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

2.2.3 Campylobacter in foodstuffs

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - fresh - at slaughterhouse	PVD, EFET	Single	25 gr	47	33					33

Footnote:

Survey - targeted monitoring - selective sampling

2.2.4 Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified	C. fetus
Cattle (bovine animals) - calves (under 1 year) [1)]	PVD, NRL-LAR	Animal	20	0						
Goats [2)]	PVD, NRL-LAR	Animal	1	0						
Pigs [3)]	PVD, NRL-LAR	Animal	1	0						
Sheep [4)]	PVD, NRL-LAR	Animal	56	11						11
Solipeds, domestic - horses [5)]	PVD, NRL-LAR	Animal	1	0						

Comments:

[1)] Aborted fetus
[2)] Aborted fetus
[3)] Aborted fetus
[4)] Aborted fetus
[5)] Aborted fetus

Footnote:

Clinical investigation of abortions . Differential diagnosis among causative agents for abortion at field level.

2.2.5 Antimicrobial resistance in Campylobacter isolates

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Animals

Test Method Used	Standard methods used for testing

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

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Food

Test Method Used	Standard methods used for testing

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

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Feed

Test Method Used	Standard methods used for testing

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

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

A. Listeriosis general evaluation

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

DISEASE/AGENT: Listeriosis
AFFECTED SPECIES: Animals and Food

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

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

Summary statistical results of 2009 zoonoses monitoring

Sample CategoriesPercentage % of positive samples among tested units for Listeria monocytogenes
Animals (sheep and Goats) 10,89
Other Food 19,76
Pig Meat 31,47
Milk and dairy products0

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

Summary Statistical Results

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

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

2.3.2 Listeriosis in humans

A. Listeriosis in humans

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

DISEASE/AGENT: Listeriosis
AFFECTED SPECIES: Humans

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

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

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	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 bovine animals - fresh	PVD -NVL	Single	25 gr	15	0	15	0			
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant		---								
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail	PVD -NVL	Single	25 gr	1	0	1	0			
Meat from broilers (Gallus gallus) - fresh	PVD -NVL	Single	25 gr	3	2	3	2			
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant	PVD -NVL	Single	25 gr	15	4	15	4			
Meat from pig - fresh	PVD -NVL	Single	25 gr	129	5	129	5			
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	PVD -NVL	Single	25 gr	232	73	197	55	35	9	9
Fish - gravad /slightly salted	PVD -NVL	Single	25 gr	11	0	11	0			
Other food	PVD -NVL	Single	25 gr	19	0	19	0			

Footnote:

Routine monitoring - selective sampling, ISO 11290/01

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	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
Cheeses made from sheep's milk - hard - made from pasteurised milk - at retail	PVD	Single	25 gr	214	0	209	0	5	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail	PVD	Single	25 gr	545	0	495	0	50	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	PVD	Single	25 gr	40	0	40	0			
Milk, cows' - pasteurised milk - at retail	PVD	Single	25 gr	45	0	45	0			
Cheeses, made from unspecified milk or other animal milk - unspecified	PVD	Single	25 gr	53	0	53	0			
Dairy products (excluding cheeses) - dairy products, not specified	PVD	Single	25 gr	14	0	14	0			
Dairy products (excluding cheeses) - ice-cream	PVD	Single	25 gr	5	0	5	0			
Infant formula	PVD	Single	25 gr	3	0	3	0			
Other processed food products and prepared dishes - sandwiches	PVD	Single	25 gr	88	0	88	0			

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals) [1)]	PVD	Animal	1	0		
Goats [2)]	PVD	Animal	37	6	6	
Pigs [3)]	PVD	Animal				
Sheep [4)]	PVD	Animal	64	5	5	
Deer [5)]	PVD	Animal	1	0		
Rabbits [6)]	PVD	Animal	1	0		

Comments:

[1)] at farm
[2)] at farm
[3)] at farm
[4)] at farm
[5)] at farm
[6)] at farm

Footnote:

clinical investigations. Sampling details: Brain (head)- Internal organs.

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

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

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

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

Results of investigations in the year 2009
Only severar animal and food samples were tested for E.coli spp in 2009

2.4.2 E. coli infections in humans

A. Verotoxigenic Escherichia coli infections in humans

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

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

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

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

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

A. Tuberculosis general evaluation

History of the disease and/or infection in the country

Susceptible population (overall Bovine population size estimate)
911.941 animals raised in 34.883 herds (37.903 holdings)

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 (2008) as the herd prevalence slightly decreased from 1,97% (2008) to 1,94% this year (2009). The herd incidence rate similarly decreased from 1,13% (2008) to 0,84 % (2009). The 2009 animal prevalence (0,73%) reported stable compared to the previous year 2008 (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 the eradication programme, 114 positive herds with 9.746 animals were reported at the end of the reporting year 2009. However, following epidemiological data analysis at country level, 15.226 herds reported officially free, 3.274 herds reported with suspended health status and 3.074 herds reported as herds of unknown health status.

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

programmes at local level.

In general, the epidemiological impact of M. bovis situation in 2009 remained steady with observed variations in prevalence and incidence rates in comparison with previous years epidemiological figures. In general, Bovine Tuberculosis infection remains a significant animal health problem in several areas of Greece with endemic characteristics, especially in previous infected herds with adult animals. In addition Control and eradication measures for old and new infected herds should be a major continuous task for the veterinary services at regional and local level. In conclusion, further attempts and actions for investigating the epidemiology of the disease, identifying the source of infection, tracing the infected farms after identifying TB lesions at slaughterhouse and properly implementing the program respecting the appropriate timetable between the checks will be followed in order to meet the eradication targets of Bovine Tuberculosis the coming implementation years.

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

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

Additional information

Summary results of the zoonoses monitoring for the year 2009

•Number of herds under the programme (official controls): 22.576
•Number of animals under the programme (official controls): 592.091
•Number of herds tested by tuberculin test: 6.540
•Number of herds positive: 127
•Number of new herds positive : 55
•Number of animals tested by tuberculin test: 237.304
•Number of animals as positive TB reactors: 1.736
•Total number of animals slaughtered under the programme: 1.779

2.5.2 Tuberculosis, mycobacterial diseases in humans

A. Tuberculosis due to Mycobacterium bovis in humans

Additional information

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

Susceptible population
10.934.097 (National Census, 2001)

Surveillance system
Mandatory reporting and notification policy
Epidemiological surveillance

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

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

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

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

Source of human infection
Human contact.

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

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

2.5.3 Mycobacterium in animals

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Ελλαδα	25081	22576	6541	127	55	10	7.87	28.97	1.94	.84
Total : [1)]	25081	22576	6541	127	55	10	7.87	28.97	1.94	.84

Comments:

[1)] N.A.

Footnote:

The Bovine Tuberculosis Programme in 2009 has not been co-financed by EU. Data Presentation and elaboration traditionally follows the format of co-financed programmes because the resent past these programmes were obtained financial support by EU and the veterinary services collected data using EU protocols.

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
Ελλαδα	673053	592091	237304	237304	1736	1620	1779	40.08	.73
Total : [1)]	673053	592091	237304	237304	1736	1620	1779	40.08	.73

Comments:

[1)] N.A.

Table Bovine tuberculosis in countries and regions that do not receive Community co-financing for eradication programmes

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/432/EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Ελλαδα	25081	673053	15226	60.71	114	.45	once a year	237304			
Total : [1)]	25081	673053	15226	60.71	114	.45	N.A.	237304	0	0	0

Comments:

[1)] N.A.

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	22576	592091	3074	73988	114	9746	888	26691	3274	77855			15226	403811
Total : [1)]	22576	592091	3074	73988	114	9746	888	26691	3274	77855	0	0	15226	403811

Comments:

[1)] N.A.

2.6 BRUCELLOSIS

2.6.1 General evaluation of the national situation

A. Brucellosis general evaluation

History of the disease and/or infection in the country

DISEASE: Bovine Brucellosis
AFFECTED SPECIES: Animals, Bovines

Susceptible population
911.941 animals raised in 34.883 herds (37.903 holdings).

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 2009 were reported to Commission and EFSA web- based data system alongside the tabulated values of the herd health status according to the epidemiological situation at the end of the year 2009 in the whole country.

From 17.758 reported herds at central level under the program, 6.127 herds were tested and 288 herds were found infected (period herd prevalence: 4,70%). From the positive herds, 134 were new cases (incidence: 2,19%). Among 400.060 animals under the program, 219.497 were tested (97.171 tested individually) and 4.066 disease-positive reactors were recorded.

Concerning the epidemiological situation at the end of the year, 202 herds were classified as infected

herds, 1.110 herds have never been investigated and remained in the unknown health status, 204 herds tested negative and 13.651 herds were reported as officially free. Additionally, in 2.476 herds the health status has been suspended, mainly because the routine serology testing in Blood serum or bulk milk has not been performed during the required by the programme intervals.

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

Technical evaluation.
Observed variations have been recorded on the evolution of bovine Brucellosis for the year 2009. The 2009 period prevalence rate reported higher (4,70%) compared to the previous year 2008 (3,92%). The estimated herd incidence rate slighted decreased from 2,33 % (2008) to 2,19% (2009). The 2009 animal prevalence (1,85%) reported higher in comparison with the previous year 2008 (1,72%). 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 2009 has not significantly improved compared to 2008, Bovine Brucellosis infection still remains a significant animal health problem in several areas of Greece with endemic characteristics, especially in previous infected herds or herds not periodically tested according to the programme requirements. In addition, strict Control and eradication measures for old and new infected herds should be a major task and priority for the veterinary services at regional and local level. In conclusion, further attempts and actions for investigating the epidemiology of the disease, identifying the source of infection and properly implementing the national program shall be urgently undertaken in order to meet the disease eradication targets for the next years.

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

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

Recent actions taken to control the zoonoses

RB-51 Vaccination programme in Thessaloniki prefecture
As an additional preventive measure in order to rapidly reduce the prevalence of Bovine Brucellosis, a vaccination policy using the RB-51 vaccine (Brucella abortus strain) was implemented in the specific high risk area (Thessaloniki) in order to facilitate the progress of the existing Brucellosis eradication programme in Bovine Herds (dairy herds) which is in force and works concurrently with the vaccination strategy. During 2009, 115 Bovine herds (11.996 animals) reported vaccinated.

Summary Epidemiological and Statistical Data on the evolution of 2009 Bovine Brucellosis Programme are presented in the Reporting Tables of EFSA web-based zoonoses system.

Suggestions to the Community for the actions to be taken

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

Additional information

Summary results of the zoonoses monitoring in the year 2009

- Number of herds under the programme (official control): 17.758
- Number of animals under the programme (official control): 400.060
- Number of herds tested: 6.127
- Number of herds positive: 288
- Number of new herds positive: 134
- Number of animals tested: 219.497
- Number of animals tested individually: 97.171
- Number of animals positive: 4.066
- Total number of animals slaughtered: 4.980

2.6.2 Brucellosis in humans

A. Brucellosis in humans

Results of the investigation

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

Results of the 2005 zoonoses monitoring period.

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

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

DISEASE/AGENT: Brucellosis
SUSCEPTIBLE SPECIES: Humans

Susceptible population
10.934.097 (National Census ,2001)

Surveillance system
Mandatory reporting and notification policy
Epidemiological surveillance

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

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

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

Relevance as zoonotic disease

Relevance as zoonotic disease

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

Source of human infection

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

2.6.3 Brucella in foodstuffs

Table Brucella in food

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Milk, cows' - raw milk for manufacture - intended for manufacture of pasteurised/UHT products	PVD	Single	1207	9				9

Footnote:

Monitoring - official controls

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

B. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

Additional information

DISEASE/AGENT: Ovine and Caprine Brucellosis , Brucella melitensis
AFFECTED SPECIES: Animals, Ovine and caprine

Susceptible population (Data 2008 / Directorate of Animal Health , MRDF)
15.194.314 sheep and Goats, in 117.530 Flocks.

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

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

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

Vaccination policy
Vaccination according to the control program.

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

Vaccination policy

SEMI-WILD BOVINE VACCINATION WITH REV 1 VACCINE UNDER THE OVINE AND CAPRINE CONTROL AND ERADICATION PROGRAMME

As an additional preventive measure under the existing control and eradication brucellosis programme for sheep and goats, the 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.
Summary results of the official mass vaccination 2009 programme in semi- wild bovines under the provisions of the ovine and caprine control and eradication brucellosis programme:

Number of flocks vaccinated: 942
Number of animals vaccinated : 11.923

Control program/mechanisms

The control program/strategies in place

Summary results of the zoonoses monitoring in the year 2009 from the eradication zone

•Number of flocks under the programme (official control): 23.369
•Number of animals under the programme (official control): 3.731.390
•Number of flocks tested: 715
•Number of flocks positive: 24
•Number of new flocks positive: 2
•Number of animals tested individually: 58.093
•Number of animals positive: 366
•Total number of animals slaughtered: 366

Notification system in place

Mandatory notification status.

Results of the investigation

EPIDEMIOLOGICAL SITUATION IN THE MAINLAND – DATA ANALYSIS
Mass vaccination carried out in the Mainland. During 2009, based on vaccination records and reports from the Regional Veterinary Directorates (at Prefecture level) , 757.129 sheep and goats from 24.394 flocks were vaccinated with the vaccine REV 1 . Further analysis and detailed statistics (flock and animal vaccination data, follow –up and up to date vaccination activities) are available through the central data base files of the Department of Zoonoses (Animal Health Directorate) and the specific computerized system for monitoring the sheep and goat vaccination programme at national , regional and local level (mainland). Revised summary data are presented into the Reporting tables.
Summary results of the official mass vaccination 2009 programme in sheep and goats:

Number of flocks vaccinated: 24.394
Number of animals vaccinated : 757.127

EPIDEMIOLOGICAL SITUATION IN THE ISLANDS – DATA ANALYSIS
In the islands (eradication zone), except Evia, Lesvos and Leros, the 2009 flock incidence and animal prevalence of brucellosis in tested sheep and goats were reported 0,28 % and 0,54 % respectively. The islands of Lesvos and Leros have been excluded from the eradication policy and belong to the mainland vaccination programme status.
The 2009 Brucella Melitensis flock prevalence and incidence rates within eradication zone are mainly influenced (not representative from all the regions of the eradication zone with low herd coverage and no positive results) by the positive reactors reported from the regions Lasithi , Dodekanissa and Pireas where the programme is carried out.

The reported results of the eradication programme for the year 2009 are presented into the web system

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

Epidemiological and Technical evaluation
The 2009 Ovine and Caprine Brucellosis control and eradication programme was implemented in the mainland and islands of Greece. The B.melitensis programme was approved and co-financed by the E.U based on the Commission Decision 2008/897/EC. Greek Farmers obtained compensation for positive-infected sheep and goats based on the requirements and provisions of the National Ministerial Decision 713/2009. The Country is divided in 54 prefectures - Nomos. For the implementation of brucellosis control and eradication programme, Greece is divided in two programme zones in which different policies and

measures are applied, the control strategy in the mainland (mass vaccination of young and adult female small ruminants) and the eradication policy in the islands which is based on test and slaughter of positive reactors respectively.

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

Relevance as zoonotic disease

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

Source of human infection

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

Additional information

Epidemiological history

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

Source of human infection

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

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Pigs [1)]	PVD	Animal	1	0				
Solipeds, domestic - horses [2)]	PVD	Animal	1	0				

Comments:

[1)] at farm
[2)] at farm

Footnote:

Clinical investigations due to abortions in the targeted animals. Lab methods: microbiological culture on serum dextroze agar , Farrell's modified substrates.

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
Ελλαδα	24609	23369	715	24	2	1	4.17	3.06	3.36	.28
Total : [1)]	24609	23369	715	24	2	1	4.17	3.06	3.36	.28

Comments:

[1)] N.A.

Footnote:

The ovine and caprine eradication programme has been implemented in the eradication zone which covers the islands of the country. The basic principles of the programme are based on test (blood examinations) and slaughter policy of positive Brucella melitensis reactors.

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
Ελλαδα	4009926	3731390	58093	58093	313	313	313	1.56	.54
Total : [1)]	4009926	3731390	58093	58093	313	313	313	1.56	.54

Comments:

[1)] N.A.

Table Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Total number of existing bovine		Officially free herds		Infected herds		Surveillance						Investigations of suspect cases								
							Serological tests			Examination of bulk milk			Information about			Epidemiological investigation					
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of suspended herds	Number of positive animals		Number of animals examined microbio logically	Number of animals positive microbio logically
																		Sero logically	BST		
Ελλαδα	25081	673053	13651	54.43	202	.81	6127	97171	288		219497										
Total : [1)]	25081	673053	13651	54.43	202	.81	6127	97171	288	0	219497	0	0	0	0	0	0	0	0	0	0

Comments:

[1)] N.A.

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
Ελλαδα	25081	17758	6127	288	134	29	10.07	34.5	4.7	2.19
Total : [1)]	25081	17758	6127	288	134	29	10.07	34.5	4.7	2.19

Comments:

[1)] N.A.

Footnote:

The Bovine Brucellosis Programme in 2009 has not been co-financed by EU. Data Presentation and elaboration traditionally follows the format of co-financed programmes because the resent past these programmes were obtained financial support by EU and the veterinary services collected data using EU protocols.

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
Ελλαδα	673053	400060	219497	97171	4066	4085	4980	54.87	1.85
Total : [1)]	673053	400060	219497	97171	4066	4085	4980	54.87	1.85

Comments:

[1)] N.A.

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	17758	400060	1110	11840	202	13777	204	6964	2476	33729	115	11996	13651	321754
Total : [1)]	17758	400060	1110	11840	202	13777	204	6964	2476	33729	115	11996	13651	321754

Comments:

[1)] N.A.

Footnote:

Free status refers to vaccination status for dairy bovines raised only in farms of the prefecture - Nomos of Thessalonika where bovines have been vaccinated with RB 51 vaccine and were under the Bovine Brucellosis Eradication Programme in pararell with RB 51 vaccination progrmme

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	23369	3731390	9833	1913813	24	3477	3167	329137	4346	955400			5999	529563
Total : [1)]	23369	3731390	9833	1913813	24	3477	3167	329137	4346	955400	0	0	5999	529563

Comments:

[1)] N.A.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

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

DISEASE/AGENT: Yersiniosis
AFFECTED SPECIES: Animals and Food

No Data were available at central authority level for animal and Food in 2009

2.7.2 Yersiniosis in humans

A. Yersinosis in humans

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

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

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

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

A. Trichinellosis general evaluation

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

DISEASE/AGENT: Trichinellosis , Trichinella spp.
AFFECTED SPECIES: Animals
Susceptible population
All domestic farmed and wild swine eligible for slaughter.

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

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

Epidemiological history

No positive findings were reported at slaughterhouses meat inspections in 2008.
The reporting year 2009 , 826.618 pigs were tested for trichinella spp at slaughterhouse level. These animals were examined by the new official reference method of Trichinella detection as forseen and described in the Annex 1 of the Commission Regulation 2075/2005 (Magnetic stirrer method for pooled sample digestion).

Results of monitoring
Two (2) positive wild farmed boars were found in the framework of zoonosis monitoring. The causative agents were Trichninella britovi (n=1) and Trichinella spp- unspecified (n=1). T. britovi strain was identified by PCR in the Community Reference Laboratory for Trichinella.

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

2.8.2 Trichinellosis in humans

A. Trichinellosis in humans

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

DISEASE/AGENT: Trichinellosis
AFFECTED SPECIES: Human

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

2.8.3 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified	T. britovi
Pigs - breeding animals - unspecified - sows and boars [1)]	PVD	Animal	3022	0			
Pigs - fattening pigs - not raised under controlled housing conditions in integrated production system [2)]	PVD	Animal	485	0			
Pigs - fattening pigs - raised under controlled housing conditions in integrated production system [3)]	PVD	Animal	820027	0			
Wild boars - farmed [4)]	PVD	Animal	2892	2		1	1
Wild boars - wild [5)]	PVD	Animal	192	0			

Comments:

[1)] at slaughterhouse leve
[2)] at slaughterhouse level
[3)] at slaughterhouse level
[4)] at slaughterhouse level
[5)] at slaughterhouse level

Footnote:

For the Reporting year 2009, 826.618 pigs, in total, were tested for Trichinella at slaughterhouse level. These animals were examined by the new official reference method for Trichinella detection as forseen and described in the Annex 1 of the Commission Regulation 2075/2005 (Magnetic stirrer method for pooled sample digestion).
From 2892 wild- farmed boars tested, 2 found positive. One animal-sample (1) was found positive for Trichinella britovi and the second one reported Trichinella spp-unspecified . Parasitic identification coducted by the Community Reference Laboratory in collaboration with the National Reference Laboratory in Athens for the single unit of T.britovi strain.

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

A. Echinococcus spp. general evaluation

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

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

Susceptible population
All animals eligible for slaughter at country level.

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

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

Epidemiological history
The infection among the owned dogs has been almost disappeared due to systematic preventive treatment of animals with antiparasitic medication. The infection rate in stray dogs is difficult to be estimated. The overall infection in farm animals is decreasing over time.

Results of 2009 zoonoses monitoring

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

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

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

2.9.2 Echinococcosis in humans

A. Echinococcus spp. in humans

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

DISEASE/AGENT: Echinococcosis
AFFECTED SPECIES: Human

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

Method used
X-ray, echo and serological tests.

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

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

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

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals) [1)]	PVD	Animal	161069	1619			1619
Goats [2)]	PVD	Animal	654468	2992			2992
Pigs [3)]	PVD	Animal	826783	2			2
Sheep [4)]	PVD	Animal	2126481	39279			39279

Comments:

[1)] at slaughterhouse
[2)] at slaughterhouse
[3)] at slaughterhouse
[4)] at slaughterhouse

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 2009 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 2009 zoonoses 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
Goats	NRL , PVD	Animal	129	36	36
Sheep	NRL , PVD	Animal	128	69	69

Footnote:

NRF : National Reference Laboratory for Parasitic Diseases. Athens.
PVD : Prefecture Veterinary Directorates
1. The Laboratory method IFAT (Indirect Immunofluoresence antibody test) was used for detecting antibody titles for Toxoplasma.
2. Samples collected under the framework of targeted sampling - non random which focused on abortion investigation at field level

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. In animals 2 cases (a fox/1974 and a domestic dog /1987) were additionally reported. Rabies vaccine included into the standard vaccination protocols for dogs and cats respectively. However, the disease is present in neighbouring countries. Although rabies is a very rare disease in the EU, a risk of re-emerge does exist, especially through the cross- border movements of potentially rabid animals.

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

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

2.11.2 Lyssavirus (rabies) in animals

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Lyssavirus, unspecified	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Bats - wild	NRL-Rabies	Animal	3	0			
Dogs [1)]	NRL-Rabies	Animal	5	0			
Dogs - stray dogs [2)]	NRL-Rabies	Animal	4	0			
Wolves - wild [3)]	NRL-Rabies	Animal	1	0			
Rats - wild - at farm - animal sample - Clinical investigations [4)]	NRL-Rabies	Animal	3	0			

Comments:

[1)] Head
[2)] Head
[3)] Head
[4)] Submitted samples were not in a good condition

2.12 Q-FEVER

2.12.1 General evaluation of the national situation

A. Coxiella burnetii (Q-fever) general evaluation

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

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

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

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

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

Table 1.: Q fever in small ruminants, 2000-2006.
Number of infected flocks: 28 (01)17(02)1(O3)8(04)7(05)7(6).

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 2008 EFSA web based electronic system for zoonoses monitoring

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

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

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Cattle (bovine animals) [1)]	LVS, Athens RVL	Animal	2	1	1
Goats [2)]	LVS, Athens RVL	Animal	5	4	4
Sheep [3)]	LVS, Athens RVL	Animal	59	8	8

Comments:

[1)] at farm
[2)] at farm
[3)] at farm

Footnote:

The official samples (blood sera) collected by the state veterinarians at local level following clinical ivestigation of abortions at farm level.
Diagnostic methods performed: serological (OIE standard diagnostics)

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

A. Escherichia coli general evaluation

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

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

Surveillance system
There is no official National monitoring program in force. Nevertheless, some laboratories are using standard techniques for E.coli. detection, isolation and strain identification.

Results of investigations in the year 2008
Animals and Food samples were tested for E.coli spp in 2008
No positive E.coli results were found in animals (cattle, sheep, goats and poultry) and food. The relevant tests were not reported under the reporting tables for VTEC.

History:
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.

3.1.2 Antimicrobial resistance in Escherichia coli, non-pathogenic

Table Antimicrobial susceptibility testing of E. coli in Pigs

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	4	
Antimicrobials:	N	n
Amphenicols - Florfenicol	4	1
Cephalosporins - 3rd generation cephalosporins	4	1
Fluoroquinolones - Enrofloxacin	4	1
Quinolones - Nalidixic acid	4	2
Aminoglycosides - Streptomycin	4	4
Aminoglycosides - Gentamicin	4	1
Trimethoprim + sulfonamides	4	3
Penicillins - Ampicillin	4	4
Tetracyclines - Tetracycline	4	4
Resistant to 4 antimicrobials	4	1
Resistant to >4 antimicrobials	4	3

Table Antimicrobial susceptibility testing of E. coli in Cattle (bovine animals)

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	75	
Antimicrobials:	N	n
Cephalosporins - 3rd generation cephalosporins	75	25
Fluoroquinolones - Enrofloxacin	75	31
Quinolones - Nalidixic acid	75	62
Aminoglycosides - Streptomycin	75	75
Aminoglycosides - Gentamicin	75	50
Trimethoprim + sulfonamides	75	48
Penicillins - Ampicillin	75	74
Tetracyclines - Tetracycline	75	70
Resistant to 3 antimicrobials	75	3
Resistant to 4 antimicrobials	75	9
Resistant to >4 antimicrobials	75	63

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

Test Method Used	Standard methods used for testing
Disc diffusion	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	17
	Florfenicol			18
Tetracyclines	Tetracycline		8	18
Fluoroquinolones	Ciprofloxacin		0.03	
	Enrofloxacin			21
Quinolones	Nalidixic acid		16	18
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		16	14
	Gentamicin		2	14
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides			15
Cephalosporins	Cefotaxim		0.25	
	Cefoperazone			20
Penicillins	Ampicillin		8	16

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

Footnote:

LAB 1 Thessaloniki

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic in Animals

Test Method Used	Standard methods used for testing

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

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic in Food

Test Method Used	Standard methods used for testing

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

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic in Feed

Test Method Used	Standard methods used for testing

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

A. Histamine General evaluation

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

DISEASE/AGENT: Histamine in Food

Surveillance system

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

Results of monitoring

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

4.2.2 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 [1)]	NVL - Thessaloniki	Single	5 gr	24	0	24			

Comments:

[1)] imported products

Footnote:

Routine monitoring. Imported products, canned and frozen. Lab analysis conducted by the Institute of Food Hygiene of Thessaloniki- Greece, Department of Residues control in food of animal origine. Appllied for the fish species : Clupeidae, Engraulidae, Coryfenidae, Pomatomidae, Scombresosidae.

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

5. FOODBORNE

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

A. Foodborne outbreaks

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

Greece enhanced its surveillance systems in 2003, in the context of the 2004 Athens Olympic Games. The mandatory and laboratory notification systems were improved in order to gather more accurate data as well as to include notification of food-borne outbreaks.

Food-borne outbreaks are reported through the Mandatory Notification System. The competent body is the Foodborne and Waterborne Diseases Section of the Hellenic Centre for Diseases Control and Prevention (HCDCP).

Once a food-borne outbreak is notified, the public health professionals conduct epidemiological investigation in order to estimate the extent of the outbreak, identify the source and take control measures. Furthermore, the Public Health Directorate of the competent Prefecture is informed and conducts the environmental investigation, whenever it is needed.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

The number of reported food-borne outbreaks has been quite stable since 2004.

In 2009, 54 food-borne outbreaks were reported. One of them fulfilled the recently formed definition of the verified outbreak and its epidemiological characteristics are presented in detail.

Summarised data for the 53 possible outbreaks are provided as well.

It should be mentioned that the reporting date was used as the onset of foodborne outbreaks as the onset of symptoms in the first case of the outbreak was not always known.

Salmonella spp. was the predominant etiologic agent for the majority of the reported food-borne outbreaks. This is a finding consistent with previous years. Hepatitis A Virus, was detected as a cause of one outbreak with four cases.

Almost 65% of the outbreaks were domestic (only one household was involved).

In regard to the severity of human cases, no outbreak-related deaths were reported in 2009.

Table Foodborne Outbreaks: summarised data

	Total number of outbreaks	Outbreaks	Human cases	Hospitalized	Deaths	Number of verified outbreaks
Bacillus	0	0	unknown	unknown	unknown	0
Campylobacter	1	0	unknown	unknown	unknown	1
Clostridium	0	0	unknown	unknown	unknown	0
Escherichia coli, pathogenic	0	0	unknown	unknown	unknown	0
Foodborne viruses	1	1	4	2	0	0
Listeria	0	0	unknown	unknown	unknown	0
Other agents	4	4	14	11	0	0
Parasites	0	0	unknown	unknown	unknown	0
Salmonella	38	38	140	66	0	0
Staphylococcus	1	1	12	0	0	0
Unknown	9	9	330	7	0	0
Yersinia	0	0	unknown	unknown	unknown	0

Other agents are: 3 possible shigella outbreaks and 1 Brucella spp- unspecified possible outbreake.

Table Verified Foodborne Outbreaks: detailed data for Campylobacter

Please use CTRL for multiple selection fields

C. jejuni

	Value
Code	
Outbreaks	1
Human cases	60
Hospitalized	14
Deaths	0
Foodstuff implicated	Tap water, including well water
More Foodstuff information	Treated tap water of a rural area's water supply system in a Greek island was the implicatedfoodstuff of this outbreak
Type of evidence	Analytical epidemiological evidence;Laboratory characterization of food and human isolates;Laboratory detection in human cases;Laboratory detection in implicated food
Outbreak type	General
Setting	Household
Place of origin of problem	Water distribution system
Origin of foodstuff	unknown
Contributory factors	Water treatment failure
Other Agent (Mixed Outbreaks)	
Comment	

Type of evidence:
1. Laboratory detection in human cases