



ITALY

The Report referred to in Article 5 of Directive 92/117/EEC

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

including information on foodborne outbreaks and
antimicrobial resistance in zoonotic agents

IN 2004

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Italy**

Reporting Year: **2004**

Institutions and laboratories involved in monitoring:

Laboratory name	Description	Contribution
IZSTO	Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta	
IZSBS	Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia	
IZSPD	Istituto Zooprofilattico Sperimentale delle Venezie	
IZSPG	Istituto Zooprofilattico Sperimentale dell'Umbria e Marche	
IZSRM	Istituto Zooprofilattico Sperimentale del Lazio e Toscana	
IZSTE	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise	
IZSNA	Istituto Zooprofilattico Sperimentale del Mezzogiorno	
IZSFG	Istituto Zooprofilattico Sperimentale della Puglia e Basilicata	
IZSPA	Istituto Zooprofilattico Sperimentale della Sicilia	
IZSSS	Istituto Zooprofilattico Sperimentale della Sardegna	
NRC-BRUC	National reference center for animal brucellosis	
NRC-SALM	National reference center for salmonellosis	
NRC-ANTI	National reference center for antimicrobial susceptibility	
NRC-EPID	National reference center for epidemiology	

PREFACE

This report is submitted to the European Commission in accordance with Article 5 of Council Directive 92/117/EEC¹. 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 Italy during the year 2004. 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.

¹ Council Directive 92/117/ECC of 17 December 1992 concerning measures for protection against specified zoonoses and specified zoonotic agents in animals and products of animal origin in order to prevent outbreaks of foodborne infections and intoxications, OJ L 62, 15.3.1993, p. 38

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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.

Table 14.1 Susceptible animal populations: number of herds and holdings rearing animals

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks		Number of holdings	
			Year*		Year*
Cattle (bovine animals)	dairy cows and heifers	56096	2004	48625	2004
	meat production animals	100984	2004	81355	2004
	mixed herds	28535	2004	23370	2004
	in total	185615	2004	152633	2004
Gallus gallus	broilers			300747	2000
	laying hens			479729	2000
	in total			521539	2000
	in total			31263	2000
Geese	in total				
Pigs	in total	195325	2000		
Solipeds	horses - in total	48661	2000		
Turkeys	in total	35132	2000		
Guinea fowl	in total			14532	2000
Sheep and goats	in total	119807	2003		

Footnote

Data sources:

Cattle - bovine national database (bovine identification and registration system, Reg. EC 1760/2000)

Sheep and goats - brucellosis eradication programme and animal identification system (Directive 91/68/EEC and Directive 92/102/EEC)

Other animals - National Institute of Statistics

Table 14.2 Susceptible animal populations: number of animals

* Only if different than current reporting year

Animal species	Category of animals	Livestock numbers (live animals)		Number of slaughtered animals	
			Year*		Year*
Cattle (bovine animals)	calves (under 1 year)	1944943	2004	991245	2004
	dairy cows and heifers	3615219	2004	640669	2004
	meat production animals			1807803	2004
	in total	6309034	2004	3500107	2004
Gallus gallus	broilers	96708718	2000		
	laying hens	44781166	2000		
	in total	171343324	2000		
	in total	356887	2000		
Geese	in total	8614016	2000	12920000	2000
Pigs	in total	184731	2000	235000	2000
Solipeds	horses - in total	12937490	2000		
Turkeys	in total	4150814	2000		
Guinea fowl	in total	8589814	2003	6935000	2002
Sheep and goats	in total				

Footnote

Data sources:

Cattle (live animals and slaughtered) - bovine national database (bovine identification and registration system, Reg. EC 1760/2000). For slaughtered animals data refer to cattle bred in Italy only (animals coming from other countries are not included)

Sheep and goats (live animals) - brucellosis eradication programme and animal identification system (Directive 91/68/EEC and Directive 92/102/EEC)

Other animals and slaughtered sheep and goats - National Institute of Statistics. For slaughtered animals, data include animals coming from other countries.

2. INFORMATION ON SPECIFIC ZONOSSES AND ZONOTIC 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

Salmonella in foodstuffs

Surveillance of *Salmonella* spp. contamination in foodstuffs in Italy is carried out by official veterinarians, which have the task of supervising or performing inspections in plants and sampling. All samples taken within the activity of the National Health Service, which is organised in Local Health Units (LHU), are examined by the laboratories of Istituti Zooprofilattici Sperimentali (IZS), that periodically transmit their result to the Regional Governments, which produce the reports for the Ministry of Health.

Gallus gallus breeding flocks

The control of *Salmonella* Enteritidis and Typhimurium in breeding flocks of *Gallus gallus* is performed according to Directive 92/117, transposed into national legislation with DPR 497/1998 and DM 339/2000.

Salmonella in turkey, geese, ducks, pigs, cattle

There is not a national control programme in place.

Salmonella serovars and phagetypes distribution

In Italy the official control in the veterinary field (animals, food of animal origin) is carried out by IZS, which are part of the National Health system, and are present on all the national territory with 10 central centers and numerous peripheral laboratories at provincial level. The peripheral centers take care of the isolation of salmonellae from various matrices, while the typing of the isolates is performed by the central laboratories, that annually participate in a quality control study of salmonella serotyping organized by the National Reference Laboratory. The phage typing of *S. Enteritidis* and *S. Typhimurium* is executed from the National Reference Laboratory, that regularly participates in collaborative studies organized by CRL- Salmonella in Bilthoven.

Since the beginning of 2002 a structure parallel to the Enter-net system has been activated at national level, that regards the data collection on *Salmonella* spp. isolations from samples of veterinary origin, and is called Enter -Vet. The nodes of the Enter- Vet net are IZS, coordinated by the National Reference Laboratory for Salmonella. The Institutes send to the Reference Laboratory data concerning *Salmonella* typing through a computerized system, together with some strains (*Enteritidis* and *Typhimurium* in particular) for the phage typing. All the data are sent from the NRL to the Italian coordination of the Enter-net, at Istituto Superiore di Sanità in Rome.

Antimicrobial resistance in Salmonella isolates

The previously described Enter-vet system collects also data concerning antimicrobial resistance in *Salmonella*. All or a selection of the strains serotyped by the central laboratories of IZS are submitted to antimicrobial susceptibility test, by agar diffusion, following NCCLS recommendations, and with a panel of 16 molecules (CL: Colistin (10 mcg); SXT: Sulphamethoxazole/Trimethoprim (23,15 + 1,75 mcg); K: Kanamycin (30 mcg); GM: Gentamicin (10 mcg); N: Neomicin (30 mcg); CTX: Cefotaxime (30 mcg); AMC: Amoxicillin/Clavulanic Acid (20 + 10 mcg); NA: Nalidixic Acid (30 mcg); TE: Tetracycline

(30 mcg); AM: Ampicillin (10 mcg); S: Streptomycin (10 mcg); S-3: Triple Sulfa (0,25 mg) C: Chloramphenicol (30 mcg); CF: Cephalothin (30 mcg); ENR: Enrofloxacin (5 mcg); CIP: Ciprofloxacin (5 mcg); G: Sulfisoxazole (250 mcg); SPC: Spectinomycin (100 mcg); CZ: Cefazolin (30 mcg); AK: Amikacin (30 mg); SP: Spiramycin (100 mcg); TIL: Tilimicosin (15 mcg); E: Erythromycin (15 mcg); RA: Rifampin (5 mcg); P: Penicillin (10 UI); S-300: Streptomycin (300 mcg); TEC: Teicoplanin (30 mcg); VA: Vancomycin (30 mcg); GM-120: Gentamicin (120 mcg)).

Additional information

There is a national surveillance programme on compound feedingstuffs and on raw material for feed of vegetable origin (National Plan on Animal Feed). The ministerial decree of 20.4.78 provides the sampling procedure. The methods of analysis are: ISO 6579:2002 or other validated method foreseeing one phase of preenrichment of 16-20 hours at 37° of a sample of 50 g taken from the previewed final champion (Ministry of health decree of 10.3.97) All isolate of salmonella must be subjected to sierologic types in compliance with the Kauffman/White scheme and to antibiogramme by the standard NCCLS.

The disease is notifiable in humans and animals.

2.1.2. Salmonellosis in humans

Table 3.4.1.A Salmonellosis in man - species/serotype distribution

Salmonella	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc	unknown status
S. Enteritidis	6696	0	0	0	0	0	0
S. Typhimurium							
Salmonella spp.	6696						

Table 3.4.1.B Salmonellosis in man - age distribution

Age Distribution	S. Enteritidis			S. Typhimurium			Salmonella spp.		
	All	M	F	All	M	F	All	M	F
<1 year	321		133						
1 to 4 years	2511	1371	1140						
5 to 14 years	1612	931	681						
15 to 24 years	290	145	145						
25 to 44 years	591	262	329						
45 to 64 years	534	276	258						
65 years and older	802	407	395						
Age unknown	35	20	15						
Total :	6696	3600	3096	0	0	0	0	0	0

Table 3.4.2 Salmonellosis in man - seasonal distribution

Month	S. Enteritidis		S. Typhimurium		Salmonella spp.	
	Cases	Cases	Cases	Cases	Cases	Cases
January					575	
February					383	
March					356	
April					621	
May					468	
June					549	
July					810	
August					832	
September					822	
October					538	
November					434	
December					308	
not known						
Total :		0		0		6696

2.1.3. Salmonella in foodstuffs

A. Salmonella spp. in food

Control program/mechanisms

The control program/strategies in place

Surveillance of *Salmonella* spp. contamination in foodstuffs in Italy is carried out by official veterinarians, which have the task of supervising or performing inspections in plants and sampling. All samples taken within the activity of the National Health Service, which is organised in Local Health Units (LHU), are examined by the laboratories of Istituti Zooprofilattici Sperimentali, that periodically transmit their result to the Regional Governments, which produce the reports for the Ministry of Health.

The sampling scheme can vary in different LHUs; all samples are examined in laboratories accredited according to ISO 17025, following the method prescribed by ISO 6579:2002 or modifications of this method, that have been fully validated and proven to give equivalent results.

Table 3.3.1 Salmonella sp. in meat and meat products (Part A)

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium	S. Virchow	other serovars	S. Bovismorbificans	S. Bristol	S. Agona	S. Mbandaka	S. Rissen	S. Ohio	S. Indiana	S. Panama	S. Brandenburg	S. Muenster
Bovine meat	fresh - at slaughter - at processing plant - at retail - at slaughter - HACPP or own checks by industry - at processing plant - HACPP or own checks by industry - at retail - HACPP or own checks by industry - official food or feed controls (not specified) - HACPP or own checks by industry (not specified)		sample	25 g	1131	5	4													
			sample	25 g	338	1	1													
			sample	25 g	422	3														
			sample	25 g	7	0														
			sample	25 g	145	0														
			sample	25 g	60	0														
			sample	25 g	701	3		1												
			sample	25 g	77	0														
minced meat	- at processing plant - at retail		sample	25 g	164	1														
			sample	25 g	409	3		1		1										

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meat products																
non-ready-to-eat																
- at processing plant	sample	25 g	1200	13	1	4										
- at retail	sample	25 g	899	88	1	26				1					3	1
- at processing plant - HACPP or own checks by industry	sample	25 g	2885	5		2										
- at retail - HACPP or own checks by industry	sample	25 g	293	0												
- official food or feed controls (not specified)	sample	25 g	228	9		2										
- HACPP or own checks by industry (not specified)	sample	25 g	153	14												
ready-to-eat																
- at processing plant	sample	25 g	257	3												
- at retail	sample	25 g	330	10		4										
- at processing plant - HACPP or own checks by industry	sample	25 g	864	1												
- at retail - HACPP or own checks by industry	sample	25 g	257	0												
- official food or feed controls (not specified)	sample	25 g	2083	60	1	19										1
- HACPP or own checks by industry (not specified)	sample	25 g	350	19		2										
Broiler meat																
fresh																
- at slaughter	sample	25 g	43	0												
- at processing plant	sample	25 g	202	7		1	1									
- at retail	sample	25 g	269	11	1										1	1
- at slaughter - HACPP or own checks by industry	sample	25 g	10	0												

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- HACPP or own checks by industry (not specified)	sample	25 g	258	24										
ready-to-eat														
- at processing plant	sample	25 g	16	0										
- at retail	sample	25 g	50	1										
- at processing plant - HACPP or own checks by industry	sample	25 g	116	1										
- at retail - HACPP or own checks by industry	sample	25 g	230	4										
- official food or feed controls (not specified)	sample	25 g	195	5										
- HACPP or own checks by industry (not specified)	sample	25 g	265	2						1				

Footnote

Where not specified data refer to official controls

Table 3.3.1 Salmonella sp. in meat and meat products (Part B)

	S. Regent	S. Havana	S. Give	S. Infantis	S. Glostrup	S. Thompson	S. Derby	S. Heidelberg	S. Muenchen	S. Blockley	S. Anatum	S. London	S. Seremban	S. Hadar	S. Bredeney	S. Kallio	S. Livingstone	S. Cremieu	S. Hardt	S. Saintpaul
Bovine meat																				
fresh																				
- at slaughter																				
- at processing plant																				
- at retail																				
- at slaughter - HACPP or own checks by industry																				
- at processing plant - HACPP or own checks by industry																				
- at retail - HACPP or own checks by industry																				
- official food or feed controls (not specified)	2																			
- HACPP or own checks by industry (not specified)																				
minced meat																				
- at processing plant																				
- at retail																				
- at processing plant - HACPP or own checks by industry																				

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- official food or feed controls (not specified) - HACPP or own checks by industry (not specified)																				
Other meat																				
fresh																				
- at slaughter																				
- at processing plant																				
- at retail																				
- at slaughter - HACPP or own checks by industry																				
- at processing plant - HACPP or own checks by industry																				
- at retail - HACPP or own checks by industry																				
- official food or feed controls (not specified)																				
- HACPP or own checks by industry (not specified)																				
minced meat																				
- at processing plant																				
- at retail																				
- at processing plant - HACPP or own checks by industry																				
- official food or feed controls (not specified)																				
- HACPP or own checks by industry (not specified)																				

[illegible]

- at retail - HACPP or own checks by industry - official food or feed controls (not specified) - HACPP or own checks by industry (not specified)			

Footnote

Where not specified data refer to official controls

Table 3.3.1 Salmonella sp. in meat and meat products (Part C)

	S. enterica subsp. diarizonae	S. Senftenberg	S. Bida	S. Sandiego	S. Massena	S. Goldcoast	S. Berta	S. Brezany	S. Paris	S. Mapo	S. Amersfoort
Bovine meat											
fresh		1									
- at slaughter											
- at processing plant											
- at retail											
- at slaughter - HACPP or own checks by industry											
- at processing plant - HACPP or own checks by industry											
- at retail - HACPP or own checks by industry											
- official food or feed controls (not specified)											
- HACPP or own checks by industry (not specified)											
minced meat											
- at processing plant											

[illegible]

[illegible]

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[illegible]

[illegible]

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[illegible]

[illegible]

Footnote

Where not specified data refer to official controls

Table 3.3.2 Salmonella sp. in other food (Part A)

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium	S. Panama	S. Infantis	S. Bredeney	S. Thompson	S. Brandenburg	S. Derby	S. Gallinarum	S. Stanley	S. Saintpaul	S. Hillingdon	S. Indiana	S. Nessoia
cow milk																				
raw			sample	25 g	230	6		6												
- HACPP or own checks by industry			sample	25 g	460	0														
Dairy products																				
ready-to-eat			sample	25 g	8474	14	4	1		4				1		1			1	
- HACPP or own checks by industry			sample	25 g	5777	0														
ice-cream			sample	25 g	918	0														
Table eggs																				
- at packing centre			sample	25 g	431	11	9										1			
- at retail			sample	25 g	680	16	10	2		1					1			1		
- at packing centre - HACPP or own checks by industry			sample	25 g	18	0														
- at retail - HACPP or own checks by industry			sample	25 g	48	0														
Egg products																				
- official food or feed controls (not specified)			sample	25 g	649	9	6	1							1					
			sample	25 g	329	0														

[illegible]

Footnote

Where not specified data refer to official controls

Table 3.3.2 Salmonella sp. in other food (Part B)

	other serovars
cow milk	
raw	
- HACPP or own checks by industry	
Dairy products	
ready-to-eat	1
- HACPP or own checks by industry	
ice-cream	
Table eggs	
- at packing centre	1
- at retail	
- at packing centre - HACPP or own checks by industry	
- at retail - HACPP or own checks by industry	
Egg products	
- official food or feed controls (not specified)	
- HACPP or own checks by industry	

Raw material (liquid egg) for egg products	
- HACPP or own checks by industry	
Fishery products	
fish	
- HACPP or own checks by industry	
Other food	
- official food or feed controls	
- HACPP or own checks by industry	

Footnote

Where not specified data refer to official controls

2.1.4. Salmonella in animals

A. Salmonella spp in turkey - breeding flocks and meat production flocks

Control program/mechanisms

The control program/strategies in place

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

There is not a national control programme for Salmonella spp. in turkeys. In the Veneto Region, in 2004 a monitoring programme has been carried out in turkeys at slaughter. Starting from the prevalence detected in a previous monitoring campaign (54%), the scheme for 2004 was designed in order to allow the detection of a bilateral variation in prevalence of 12%, with a IC of 95% and a power of 95% (223 slaughter batch to be sampled). 30 cloacal swabs were taken per batch. Samples were examined in 6 pools, using the method prescribed by the Community Reference Laboratory of Bilthoven, that requires the use of MSRV as unique selective enrichment.

B. Salmonella spp in geese - breeding flocks and meat production flocks

Control program/mechanisms

The control program/strategies in place

Breeding flocks

There is not a national control programme in place. Data arise from routine diagnostic activity of Istituti Zooprofilattici Sperimentali.

Meat production flocks

There is not a national control programme in place. Data arise from routine diagnostic activity of Istituti Zooprofilattici Sperimentali.

C. Salmonella spp in ducks - breeding flocks and meat production flocks

Control program/mechanisms

The control program/strategies in place

Breeding flocks

There is not a national control programme in place. Data arise from routine diagnostic activity of Istituti Zooprofilattici Sperimentali.

Meat production flocks

There is not a national control programme in place. Data arise from routine

diagnostic activity of Istituti Zooprofilattici Sperimentali.

D. Salmonella spp in pigs

Control program/mechanisms

The control program/strategies in place

Fattening herds

There is not a national control programme for Salmonella spp. in pigs.

In the Veneto Region, in 2004 a monitoring programme has been carried out in pigs at slaughter. Starting from the prevalence detected in a previous monitoring campaign (29,33%), the scheme for 2004 was designed in order to allow the detection of a bilateral variation in prevalence of 12%, with a IC of 95% and a power of 95% (187 slaughter batch to be sampled). One faecal sample was taken per batch. Samples were examined using the method prescribed by the Community Reference Laboratory of Bilthoven, that requires the use of MSRV as unique selective enrichment.

E. Salmonella spp. in bovine animals

Control program/mechanisms

The control program/strategies in place

There is not a national control programme for Salmonella spp. in cattle.

In the Veneto Region, in 2004 a monitoring programme has been carried out in bovine animals at slaughter (veal calves, slaughter cattle, cows). Starting from the prevalence detected in a previous monitoring campaign (1,55%, 1,94 and 3,42 respectively), the scheme for 2004 was designed in order to allow the detection of an increase in prevalence of 4%, with a IC of 95% and a power of 95% (102, 128 and 222 slaughter batches to be sampled for each category of animals). One faecal sample was taken per batch. Samples were examined using the method prescribed by the Community Reference Laboratory of Bilthoven, that requires the use of MSRV as unique selective enrichment.

F. Salmonella spp. in animal - Gallus gallus - breeding flocks, unspecified

Control program/mechanisms

The control program/strategies in place

The control of Salmonella Enteritidis and Typhimurium in breeding flocks of Gallus gallus is performed according to Directive 92/117, transposed into national legislation with DPR 497/1998 and DM 339/2000.

For the isolation of salmonella from samples collected on farms or in hatcheries the ISO method 6579:2002 has to be used or in alternative the method prescribed by the Community Reference Laboratory of Bilthoven, that requires the use of MSRV as unique selective enrichment.

Table 3.2.1 Salmonella sp. in Poultry breeding flocks (Gallus gallus)

	Source of information	Remarks	Epidemiological unit	Flocks tested	Flocks positive	S. Enteritidis	S. Typhimurium	S. Hadar	S. Virchow	other serovars
Gallus gallus										
grandparent breeding flocks for egg production line			flocks	3	2		1			1
- at hatchery			flocks	2	2					2
parent breeding flocks for egg production line			flocks	28	1			1		
day-old chicks			flocks	26	3				3	
- during production period			flocks	21	0					
unspecified			flocks	38	2				2	
- during rearing period			flocks	13	0					
- at hatchery			flocks	18	10				9	1
grandparent breeding flocks for meat production line			flocks	2	0					
parent breeding flocks for meat production line			flocks	82	2					2
day-old chicks			flocks	70	2		1			1
- during rearing period			flocks	49	7			1		6
- during production period			flocks	68	1		1			
- at hatchery			flocks	80	36	1		2	1	32
(unspecified)			flocks	3	0					
parent breeding flocks, unspecified			flocks	1	0					
- during rearing period			flocks	1	0					
- during production period			flocks	8	2					2
day-old chicks			flocks	2	0					
(unspecified)			flocks	7	0					

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.2 Salmonella sp. in other commercial poultry (Part A)

	Source of information	Remarks	Epidemiological unit	Flocks tested	Flocks positive	S. Enteritidis	S. Typhimurium	S. Virchow	S. Hadar	S. Gallinarum	S. Infantis	S. Gallina	S. Thompson	S. Muenchen	S. Litchfield	S. Escanaba	S. Amersfoort	S. Blockley	S. enterica subsp. arizonae	S. enterica subsp. diarizonae
Gallus gallus																				
laying hens																				
day-old chicks			flock	199	16		1	7												
- Control programme (Unit: flock)			sample	13	1			1												
- Control programme (Unit: sample)			flock	39	4				1	1										
- during production period																				
unspecified (1)			flock	53	6	4				1								1		
- survey			sample	93	5				5											
- Control programme (Unit: flock)			flock	10	2	2						1	1							
- Control programme (Unit: sample)			sample	1	0															
- during production period			sample	270	6	1		5												
- HACPP or own checks by industry																				
- during production period			slaughter batch	78	15	2	1		1	2	2		2					1		
- monitoring programme (Veneto Region)																				

45

[illegible]

(1) : more serotypes in one sample
(2) : more serotypes in one sample

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.2 Salmonella sp. in other commercial poultry (Part B)

	S. Irunu	S. Lagos	S. Montevideo	S. Pakistan	S. Potsdam	S. Singapore	S. group C2	S. group C1	S. Stanley	S. Derby	S. Ferruch	S. Augustenborg	S. Heidelberg	S. Bredeney	S. Gallinarum biovar Pullorum	S. Agona	S. Lexington	S. Rissen	S. Regent	S. Glostrup
Gallus gallus laying hens																				
	day-old chicks																			
	- Control programme (Unit: flock)																			
	- Control programme (Unit: sample)																			
	- during production period															1				
	unspecified (1)																			
	- survey																			
	- Control programme (Unit: flock)																			
	- Control programme (Unit: sample)																			
	- during production period																			
	- HACPP or own checks by industry																			
	- during production period																			
	- monitoring programme (Veneto Region)																			

[illegible]

[illegible]

(1) : more serotypes in one sample
(2) : more serotypes in one sample

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.2 Salmonella sp. in other commercial poultry (Part C)

	S. Braenderup																		
	S. Livingstone	Salmonella spp.	S. Mbandaka	S. Coeln	S. Kentucky	S. Kimuenza	S. Schwarzengrund	S. Tennessee	S. Altona	S. Stockholm	S. London	S. Brandenburg	S. Nigeria	S. Kottbus	S. Saintpaul	S. Indiana	S. Orion	S. Newport	S. Mowanjum
Gallus gallus																			
laying hens																			
day-old chicks																			
- Control programme (Unit: flock)																			
- Control programme (Unit: sample)																			
- during production period																			
unspecified (1)				1															
- survey																			
- Control programme (Unit: flock)																			
- Control programme (Unit: sample)																			
- during production period																			
- HACPP or own checks by industry																			
- during production period																			
- monitoring programme (Veneto Region)	1	2					2	1	1										
- during rearing period - Control programme (Unit: flock)																			

[illegible]

[illegible]

(1) : more serotypes in one sample
(2) : more serotypes in one sample

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.2 Salmonella sp. in other commercial poultry (Part D)

	other serovars	S. 4,5:i:-	S. Klambo
Gallus gallus			
laying hens			
day-old chicks			
- Control programme (Unit: flock)			
- Control programme (Unit: sample)			
- during production period			
unspecified (1)			
- survey			
- Control programme (Unit: flock)			
- Control programme (Unit: sample)			
- during production period			
- HACPP or own checks by industry			
- during production period			
- monitoring programme (Veneto Region)			
- during rearing period - Control programme (Unit: flock)			

- during rearing period - Control programme (Unit: sample)				
- during production period - Control programme (Unit: flock)				
- during production period - Control programme (Unit: sample)				
broilers				
day-old chicks				
- Control programme				
- HACPP or own checks by industry				
- during rearing period				
unspecified				
- Control programme (2)	5			
- HACPP or own checks by industry				
- survey				
- during rearing period - survey	1			
- during rearing period - HACPP or own checks by industry				
- during rearing period - monitoring programme (Veneto Region)	7	1	2	
unspecified				
day-old chicks				
- Control programme				
- HACPP or own checks by industry				

- during production period			
unspecified			
- survey			
- HACPP or own checks by industry (Unit: flock)			
- Control programme (Unit: flock)			
- Control programme (Unit: sample)			
- during rearing period - Control programme			
- during production period - Control programme			
- during production period (Unit: flock)			
Ducks			
- during production period			
unspecified			
- HACPP or own checks by industry			
- Control programme (Unit: flock)			
- Control programme (Unit: sample)			
breeding animals			
- Control programme			
- during rearing period - survey			
Geese			
- during production period			

unspecified				
- Control programme (Unit: flock)				
breeding animals				
Turkeys				
- during production period				
unspecified				
- Control programme (Unit: flock)				
- during production period - monitoring programme (Veneto Region)	5		3	
breeding animals				
- Control programme (Unit: animal)				
- Control programme (Unit: flock)				

(1) : more serotypes in one sample
(2) : more serotypes in one sample

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations
The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.3 Salmonella sp. in non-commercial poultry and birds

	Source of information	Remarks	Epidemiological unit	Flocks tested	Flocks positive	S. Enteritidis	S. Typhimurium	S. Blockley	S. Brancaster	S. Bredeney	S. group B	Salmonella spp.
Pigeons			animal	1867	28		5			1		20
- survey (Unit: animal)			animal	83	0							
- survey (Unit: flock)			flock	34	3		3					
- Control programme (Unit: flock)			animal	43	2		2					
			flock	112	5		5					
Guinea fowl			animal	58	0							
- Control programme (Unit: flock)			animal	184	4		1	2		1		
			flock	21	0							
Quails			animal	4	0							
- Control programme (Unit: flock)			animal	32	5		4		1			
			flock	4	0							
Pheasants			animal	217	1		1					
- Control programme (Unit: flock)			animal	11	0							
			flock	50	1						1	
Partridges			animal	2	0							
(Unit: flock)			flock	8	0							
Ostriches			animal	3	0							
- Control programme (unit: flock)			animal	2	0							
			flock	17	0							

Wildlife										
wild birds			animal	298	0					
(Unit: flock)			flock	9	0					
Pet animals										
birds			animal	146	3	2				1
(Unit: flock)			flock	22	0					
parrot			animal	12	1	1				
Peafowl			flock	1	0					

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.4 Salmonella sp. in animals (non poultry) (Part A)

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	S. Enteritidis	S. Typhimurium	S. Hadar	S. Virchow	S. enterica subsp. arizonae	S. Souza	S. enterica subsp. diarizonae	S. Entebbe	Salmonella spp.	S. Istanbul	S. Bredeney	S. Derby	S. Anatum	S. Coeln	S. Abortusovis
Cattle (bovine animals)			animal	317	1		1													
(Unit: herd) (2)			herd	497	8		6							1		1	1			
(Unit: sample)			sample	102	0															
- Control programme (Unit: animal)			animal	683	5									5						
- Control programme (Unit: herd)			herd	19	2		2													
- Control programme (Unit: sample)			sample	81	0															
- HACPP or own checks by industry			herd	44	3		3													
- monitoring programme (Veneto Region)			slaughter batch	524	8		5													
(Research activity)			animal	128	2															
Sheep			animal	307	10															2
(Unit: sample)			sample	2925	255		3							252						
- Control programme (Unit: animal)			animal	122	0															

[illegible]

(Unit: herd)												
Wildlife												
- Control programme hares - survey (local programme) (Unit: herd)		herd	43	1					1			
		animal	182	11					1			6
		animal	6	1								
		animal	63	0								
		sample	39	0								1
wild boars - survey (Regional plan) (Unit: herd)		herd	8	0								
		animal	2	0								
		animal	22	1								
		herd	1	0								
		animal	36	0								
Rabbits												
- survey (local programme)		sample	76	0								
- HACPP or own checks by industry		flock	41	0								
- survey (Unit: sample)		sample	1	1					1			
(Unit: flock)		flock	75	4					3			1
Pet animals												
cats		animal	139	2					1			1
- survey		sample	3	0								
dogs		animal	471	2								2
- survey		sample	16	0								
turtles												
- survey		sample	50	50					48			2
rat												
- survey												
Reptiles		sample	25	0								
Shellfish		animal	40	21								20
- Control programme (farm)		farm	7	0								

[illegible]

(1) : more serotypes in one sample

(2) : more serotypes in one sample

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.4 Salmonella sp. in animals (non poultry) (Part B)

	S. Muenster	S. London	S. Choleraesuis	S. Livingstone	S. Typhimurium	S. Litchfield	S. Thompson	S. Berta	S. Kedougou	S. Clackamas	S. Infantis	S. Mbandaka	S. Mismarhaemek	S. Panama	S. Rissen	S. Schwarzengrund	S. group B	S. Goldcoast	S. Meleagridis	S. Give
Cattle (bovine animals)																	1			
(Unit: herd) (2)																				
(Unit: sample)																				
- Control programme (Unit: animal)																				
- Control programme (Unit: herd)																				
- Control programme (Unit: sample)																				
- HACPP or own checks by industry																				
- monitoring programme (Veneto Region)							1	1												
(Research activity)																				
Sheep																				
(Unit: sample)																				
- Control programme (Unit: animal)																				
- HACPP or own checks by industry																				
(Unit: flock)																		5		

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[illegible]

[illegible]

(1) : more serotypes in one sample

(2) : more serotypes in one sample

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.2.4 Salmonella sp. in animals (non poultry) (Part C)

	S. Umbilo	S. Altona	S. Poona	other serovars	S. 4,5:i:-
Cattle (bovine animals)					
(Unit: herd) (2)					
(Unit: sample)					
- Control programme (Unit: animal)					
- Control programme (Unit: herd)					
- Control programme (Unit: sample)					
- HACPP or own checks by industry					
- monitoring programme (Veneto Region)				1	
(Research activity)					
Sheep					
(Unit: sample)					
- Control programme (Unit: animal)					
- HACPP or own checks by industry					
(Unit: flock)					
Goats (1)					

- Control programme (Unit: animal)							
- HACPP or own checks by industry							
- survey							
(Unit: flock)							
Pigs							
breeding animals							
- HACPP or own checks by industry						1	
(Unit: animal)							
fattening pigs							
- monitoring programme (Veneto Region)							3
(Unit: herd)							
unspecified							
- survey							
- monitoring programme (Veneto Region)							
(Unit: herd)							
- Control programme (Unit: animal)							
Solipeds							
- Control programme							
- survey							
(Unit: herd)							
Wildlife							
- Control programme						4	
hares							

- survey (local programme) (Unit: herd)					
wild boars					
- survey (Regional plan) (Unit: herd)					
Rabbits					
- survey (local programme)					
- HACPP or own checks by industry					
- survey (Unit: sample)					
(Unit: flock)					
Pet animals					
cats					
- survey					
dogs					
- survey					
turtles					
- survey					
rat					
- survey					
Reptiles					
Shellfish					
- Control programme (farm)					
- Control programme (sea)					
Water buffalos					
- HACPP or own checks by industry	1	5			3

[illegible]

(1) : more serotypes in one sample
(2) : more serotypes in one sample

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.1.5. Salmonella in feedstuffs

Table 3.1.1 Salmonella sp. in feed material of animal origin

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium	S. Infantis	S. Montevideo	S. Putten	S. Jerusalem
Feed material of land animal origin												
Dairy products - official food or feed controls			sample	25-50 gr	7	4	3		1			
Meat meal (1) - official food or feed controls - HACPP or own checks by industry			sample	25 gr	95	0						1
			sample	25-50 gr	44	1						
			plant	25 gr	1	0						
Meat and bone meal - official food or feed controls - HACPP or own checks by industry (Unit sampled: batches)			sample	25 gr	152	0						
			batch	25 gr	1540	0						
- HACPP or own checks by industry (Unit sampled: samples)			sample	25 gr	152	0						
Greaves - official food or feed controls			sample	25 gr	10	0						

(1): Unspecified

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The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.1.2 Salmonella sp. in feed of vegetable origin

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium	S. Schwarzengrund	Salmonella spp.	S. Montevideo	S. Mbandaka	S. Kentucky
Feed material of cereal grain origin													
Barley derived - HACPP or own checks by industry			sample	25 gr	2	1				1			
- official food or feed controls (Unit sampled: batches)			batch	25 gr	1	0							
- official food or feed controls (Unit sampled: samples)			sample	25 - 50 gr	26	0							
Wheat derived (1)			batch	25 gr	1	0							
- official food or feed controls (Unit sampled: batches)			batch	25 gr	3	0							
- official food or feed controls (Unit sampled: samples)			sample	25 - 50 gr	15	0							
Maize (2)			batch	25 gr	1	0							
derived - HACPP or own checks by industry			batch	25 gr	9	0							

[illegible]

[illegible]

[illegible]

(1) : Unspecified
(2) : unspecified
(3) : unspecified

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.1.3 Salmonella sp. in compound feedingstuff (Part A)

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium	S. enterica subsp. arizonae	S. Mbandaka	S. Senftenberg	S. Saintpaul	S. Blockley	S. Hadar	S. Derby	S. Djugu	S. Singapore	S. Thompson	S. Pakistan	S. Litchfield
Compound feedingstuffs for cattle	Process control (1) - official food or feed controls		sample		3	0														
			sample	25 gr	3	0														
	Final product (2) - official food or feed controls - HACPP or own checks by industry (Unit sampled: batches) - HACPP or own checks by industry (Unit sampled: samples)		sample		5	0														
			sample	25 - 50 gr	128	2		1												
			batch	25 gr	12	0														
			sample	25 gr	61	0														
Compound feedingstuffs for pigs																				
	Process control		sample		2	0														
	Final product (3) - HACPP or own checks by industry		sample		8	0														
			sample	25 gr	18	0														

[illegible]

(1) : unspecified
(2) : unspecified
(3) : unspecified
(4) : unspecified

- (5) : unspecified
- (6) : unspecified
- (7) : unspecified
- (8) : One sample is positive to more than one serotype
- (9) : One sample is positive to more than one serotype

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

Table 3.1.3 Salmonella sp. in compound feedingstuff (Part B)

	S. Agona	S. Livingstone	S. Montevideo	S. Cubana	S. Kedougou	S. Anatum	Salmonella spp.
Compound feedingstuffs for cattle							
Process control (1)							
- official food or feed controls							
Final product (2)							
- official food or feed controls			1				
- HACPP or own checks by industry (Unit sampled: batches)							
- HACPP or own checks by industry (Unit sampled: samples)							
Compound feedingstuffs for pigs							
Process control							
Final product (3)							
- HACPP or own checks by industry							
- official food or feed controls							
Compound feedingstuffs for poultry (non specified)							

[illegible]

(1) : unspecified
(2) : unspecified
(3) : unspecified
(4) : unspecified
(5) : unspecified
(6) : unspecified
(7) : unspecified

(8) : One sample is positive to more than one serotype
(9) : One sample is positive to more than one serotype

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

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 3.3.3 Salmonella serovars in animals (Part A)

Serovars	Cattle (bovine animals)		Pigs		Gallus gallus		Other poultry		Poultry		Turkeys		Water buffalos		Shellfish		Ducks		Goats		Rabbits		Solipeds		
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	
	Sources of isolates																								
Number of isolates in the laboratory	N=	8	94	8	44	458				82	666	98	210		12		3		18		2		2	39	14
Number of isolates serotyped	N=	8	94	8	44	458				92	666	109	210		12		3		18		2		2	39	14
Number of isolates per type																									
S. Abortusovis						1																	1		
S. Agbeni																							1	1	
S. Agona										10	14	21						1							
S. Anatum						9	23			4		5				1									
S. Berta	1	1				1																			
S. Blockley		1				6				6	14	29	62	1				2							
S. Brandenburg						4				2	2														
S. Bredeney		3	3	7						1	43	1	1												
S. Clackamas				1	1																				
S. Coeln										1	4														
S. Derby		2	6	76						2	9	9													
S. Enteritidis		1								4	61	1	1	1		1								2	
S. Gallinarum biovar Gallinarum										43															
S. Hadar				2	3					11	48	3	4				1								
S. Heidelberg					5					3	5	1	19												
S. Indiana										3	1	1												2	

[illegible]

Footnote

(*)M: Monitor, C: Clinical

Data source: NRC-SALM

Table 3.3.3 Salmonella serovars in animals (Part B)

Serovars	Guinea fowl		Sheep		Pigeons		Quails		Other animals	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Sources of isolates										
Number of isolates in the laboratory		26		87		65		13		407
N=										
Number of isolates serotyped		26		87		65		13		407
N=										
Number of isolates per type										
S. Abortusovis				50						0
S. Agbeni										
S. Agona										6
S. Anatum										1
S. Berta										
S. Blockley		9								57
S. Brandenburg										
S. Bredeney		3		1		2				4
S. Clackamas										
S. Coeln										1
S. Derby										2
S. Enteritidis		1								7
S. Gallinarum biovar Gallinarum						1				2
S. Hadar		3								3
S. Heidelberg										2
S. Indiana		1						1		1
S. Infantis										52
S. Kedougou										
S. Kentucky		1								7

Footnote

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Table 3.3.4 Salmonella serovars in food (Part A)

Serovars	Bovine meat		Pig meat		Broiler meat		Other poultry		Other products of animal origin		Poultry meat		Turkey meat		Live bivalve molluscs		Duck meat		Goat meat		Rabbit meat		Horse meat	
	M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)		M(*) C(*)	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Sources of isolates																								
Number of isolates in the laboratory	N=		89		772				12		421		85		47		2		2		3		3	
Number of isolates serotyped	N=		89		772				12		421		85		47		2		2		3		3	
Number of isolates per type																								
S. Agona		2		2							16		7											
S. Anatum		4		36							5		2											
S. Blockley		4		2				1			19		14											
S. Brandenburg				15							1													
S. Bredeney		3		22							2		2											
S. Derby		4		172							6		6		1									
S. Enteritidis		5		3							67				2							1		
S. Hadar		5		5							61		5		1							1		1
S. Heidelberg		3		1							1		6											
S. Infantis				37							15				1									
S. Livingstone				21							54				2									
S. London		1		51							32													
S. Montevideo		1		1							9		1											
S. Rissen		3		24							7				1									

[illegible]

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.4 Salmonella serovars in food (Part B)

Serovars	Meat from sheep			Other food		
	M(*)	C(*)		M(*)	C(*)	
Sources of isolates						
Number of isolates in the laboratory	N=	7			582	
Number of isolates serotyped	N=	7			582	
Number of isolates per type						
S. Agona						7
S. Anatum		1				17
S. Blockley						16
S. Brandenburg						5
S. Bredeney						7
S. Derby		2				80
S. Enteritidis		1				30
S. Hadar						13
S. Heidelberg						9
S. Infantis						16
S. Livingstone						14
S. London						14
S. Montevideo						12
S. Rissen						15
S. Saintpaul						5
S. Thompson						5
S. Typhimurium		3				121
other serovars						82

S. 1,4,5,12:-:i	14
Total of typed <i>Salmonella</i> /isolates	

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.5 S.Enteridis phagetypes in animals (Part A)

Phagetype	Cattle (bovine animals)		Pigs		Gallus gallus		Other poultry		Poultry		Turkeys		Water buffalos		Shellfish		Ducks		Solipeds		Goats		Rabbits	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Sources of isolates																								
Number of isolates in the laboratory	N=								61		1		1		1								2	
Number of isolates serotyped	N=								61		1		1		1								2	
Number of isolates per type																								
PT 1									5															
PT 4									9		1													
PT 6									11														1	
PT 8									8															
PT 14b									19															
PT 21																								
Not typable																								
DT RDNC																								
PT 1b									1															
PT 6b									1															
PT 12									1															
Total of typed Salmonella isolates																								

Footnote

Footnote (*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.5 S.Enteridis phagetypes in animals (Part B)

Phagetype	Guinea fowl		Sheep		Pigeons		Quails		Other animals	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Sources of isolates										
Number of isolates in the laboratory		1								7
Number of isolates serotyped		1								7
Number of isolates per type										
PT 1		1								2
PT 4										2
PT 6										
PT 8										1
PT 14b										
PT 21										1
Not typable										
DT RDNC										
PT 1b										
PT 6b										
PT 12										
Total of typed <i>Salmonella</i> isolates										

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.6 *S. Enteridis* phage types in food (Part A)

Phagetype	Bovine meat		Pig meat		Broiler meat		Other poultry		Other products of animal origin		Poultry meat		Turkey meat		Live bivalve molluscs		Duck meat		Goat meat		Rabbit meat		Horse meat	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
	N=		N=		N=		N=		N=		N=		N=		N=		N=		N=		N=		N=	
	Number of isolates in the laboratory		Number of isolates serotyped		Number of isolates per type		Number of isolates per type		Number of isolates per type		Number of isolates per type		Number of isolates per type		Number of isolates per type		Number of isolates per type		Number of isolates per type		Number of isolates per type		Number of isolates per type	
PT 1											11													
PT 4	2		1								5													
PT 6											4													
PT 8	1										3											1		
PT 14b											21													
PT 21											5													
Not typable											6													
DT RDNC											7													
PT 2	2		1													1								
PT 12											1													
PT 31											2													
PT 148																1								
PT 22																								
Total of typed Salmonella isolates																								

[illegible]

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.6 *S. Enteridis* phagetypes in food (Part B)

Phagetype	Meat from sheep		Other food	
	M(*)		C(*)	
	M(*)		C(*)	
Sources of isolates				
Number of isolates in the laboratory	N=		1	
Number of isolates serotyped	N=		1	
Number of isolates per type				
PT 1				3
PT 4				6
PT 6				
PT 8				1
PT 14b				1
PT 21				4
Not typable				2
DT RDNC			1	7
PT 2				1
PT 12				
PT 31				
PT 148				
PT 22				1
Total of typed Salmonella isolates				

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.7 *Salmonella* Typhimurium phage types in animals (Part A)

Phage type	Cattle (bovine animals)	Pigs	Gallus gallus	Other poultry	Poultry	Turkeys	Water buffalos	Shellfish	Ducks	Goats	Rabbits	Solipeds
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Sources of isolates	N=		N=		N=		N=		N=		N=	
Number of isolates in the laboratory	73	176			31	45	1	1	8		27	7
Number of isolates serotyped	73	176			31	45	1	1	8		27	7
Number of isolates per type												
DT 1					2						1	
DT 2	1											
DT 7		3										
DT 8	1	1							2			
DT 12		3									1	
DT 66		1							1			
DT 104	47	17			3	10		1	1		7	
DT 104b		3										
DT 120		6			2							
DT 193		3									2	
DT 208		7										
U 302	1	4									1	
Not typable	6	56			7	31					3	7
DT 40	1											
DT RDNC	7	34			13	4	1		1		9	
DT 22	1											

[illegible]

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.7 *Salmonella* Typhimurium phage types in animals (Part B)

Phagetype	Guinea fowl		Sheep		Pigeons		Quails		Other animals	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Sources of isolates										
Number of isolates in the laboratory		2		5		60		4		59
Number of isolates serotyped		2		5		60		4		59
Number of isolates per type										
DT 1						1				
DT 2						10				
DT 7				1						
DT 8										
DT 12										
DT 66										
DT 104										9
DT 104b										
DT 120										1
DT 193						4				7
DT 208						6				1
U 302						1				1
Not typable		1		2		4		3		12
DT 40										
DT RDNC		1		2		27				15
DT 22										
DT 160						2				2
DT 124										
DT 194										4

[illegible]

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.8 *Salmonella* Typhimurium phage types in food (Part A)

Phage type	Bovine meat		Pig meat		Broiler meat	Other poultry	Other products of animal origin	Poultry meat	Turkey meat	Live bivalve molluscs	Duck meat	Goat meat	Rabbit meat	Horse meat
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Sources of isolates	N=		N=		N=		N=		N=		N=		N=	
Number of isolates in the laboratory	33		250				11		23		10		1	
Number of isolates serotyped	33		250				11		23		10		1	
Number of isolates per type														
DT 1											1			
DT 2	1					2		1						
DT 7			1											
DT 12	2		7					1						
DT 104	12		50						3			1		
DT 104b			5											
DT 120	1		14											1
DT 193	1		9											
DT 208			7											
U 302	3		17								1			
Not typable	7		66			7		7				1		
DT RDNC	3		29			1		3						
DT 22														
DT 160								3		1				

[illegible]

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

Table 3.3.8 Salmonella Typhimurium phage types in food (Part B)

Phagetype	Meat from sheep		Other food	
	M(*)	C(*)	M(*)	C(*)
Sources of isolates				
Number of isolates in the laboratory	N=	3		121
Number of isolates serotyped	N=	3		121
Number of isolates per type				
DT 1				1
DT 2				4
DT 7				
DT 12				5
DT 104		1		15
DT 104b				1
DT 120				7
DT 193				3
DT 208				1
U 302				10
Not typable				39
DT RDNC		1		11
DT 22				1
DT 160				1
DT 124		1		
DT 194				1
DT 195				3
DT 15a				1

DT 186								1
DT 17								
DT 30								1
DT 46a								
DT 85								1
7 var.								1
Total of typed <i>Salmonella</i>/isolates								

Footnote

(*) M : Monitor, C : Clinical
Data source: NRC-SALM

2.1.7. Antimicrobial resistance in *Salmonella* isolates

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

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
S. Anatum																																		
all foodstuffs																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		23																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		23	60.87%	12			1	1					1	2	1		1	1	1	2														
Amphenicols																																		
Chloramphenicol		23	0.00													1					3	3	6	3	2	1	2	1				1		
Cephalosporin																																		
Cephalothin		23	0.00																	4	3	2	2			2	5	1	2				2	
Cefotaxim(3)		23	0.00																											2	5	2	4	
Fluoroquinolones																																		
Ciprofloxacin(1)		23	0.00																1		1	1		4	3	2	1	2	1	3	2	3		
Enrofloxacin(2)		23	0.00																										2	2	1	1	1	
Quinolones																																		
Nalidixic acid		23	8.70	2											1	1	1	1		2	2	2		1		2	1	2					1	
Trimethoprim		23	17.39%	4																														
Sulfonamides																																		
Sulfonamide		23	60.87	9	1		2		1	1						1	1	1		1			1	1	1	2								
Aminoglycosides																																		
Streptomycin		23	13.04	2				1			2	3	4	2	7	2																		
Gentamicin		23	0.00															1			3	5	7	4	2	1								
Neomycin		23	8.70				1		1		2	2	1					1	1	2	3	3	5	1										
Kanamycin		23	30.43	5						2										4	2	4	3	2			1							
Penicillins																																		
Ampicillin		23	17.39	4																3	1	4	3		1	3	3					1		

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 4

37 = 4

38 = 1

39 = -

40 = 2
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 1
37 = -
38 = 1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 2
37 = 6
38 = 1
39 = -
40 = -
41 = -
42 = 1

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
S. Blockley																																		
all animals																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		74																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		74	98.65%	36	4	13	14	5				1			1																			
Amphenicols																																		
Chloramphenicol		74	1.35	1											1		1	1	2	3	3	3	5	5	11	20	12	8	1	1				
Cephalosporin																																		
Cephalothin		74	0.00											1		1		2		3	6	4	13	17	12	10	4	1						
Cefotaxim(2)		74	0.00																						1	1		2		5	5	7	12	
Fluoroquinolones																																		
Ciprofloxacin(1)		74	0.00																3		5	5	5	9	8	18	7	8	2	4	1	2	1	
Enrofloxacin		74	1.35											1	1	9	7	8	10	9	11	13	2		1			2						
Quinolones																																		
Nalidixic acid		74	97.30	72														1				1												
Trimethoprim		74	0.00%												1	1	1	1	3	6	5	4	5	9	9	7	10	6	4	1		1		
Sulfonamides																																		
Sulfonamide		74	40.54	15	2	1	4	6	1	1				1		2	1	5	8	5	12	3	6		1									
Aminoglycosides																																		
Streptomycin		74	83.78	6		6	14	25	11	7	1	1			1	1	1																	
Gentamicin		74	0.00														2	2	3	6	8	21	19	9	3	1								
Neomycin		74	89.19	6	1	8	11	28	8	4	1		2		2	1						2												
Kanamycin		74	91.89	57		1	1	4	2	1	2	1	2	1						1	1													
Penicillins																																		
Ampicillin		74	4.05	3													1	2		2	4	8	11	5	12	9	11	3	3					

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 1

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 11

37 = 10
38 = 9
39 = 7
40 = 1
41 = 2
42 = 1

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
S. Blockley																																		
all foodstuffs																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		29																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		29	96.55%	18	2		5	3					1																					
Amphenicols																																		
Chloramphenicol		29	6.90	2																	2	1	4	3	7	6	3	1						
Cephalosporin																																		
Cephalothin		29	0.00																		3	3	5	9	8		1							
Cefotaxim(1)		29	0.00																												1	3	5	
Fluoroquinolones																																		
Ciprofloxacin		29	0.00																															
Enrofloxacin		29	3.45										1			1	1	5	4	4	6	4	1			1	1							
Quinolones																																		
Nalidixic acid		29	100.00																															
Trimethoprim		29	0.00%														1				2	1	2	2	3	7	5	1	3		2			
Sulfonamides																																		
Sulfonamide		29	37.93	6			2	2	1		1						1	2	2	1	5		3	2		1								
Aminoglycosides																																		
Streptomycin		29	75.86	2		1	2	12	5	4	2	1																						
Gentamicin		29	0.00																	2	7	3	7	7	3									
Neomycin		29	93.10		1	3	12	5	2	4		1									1													
Kanamycin		29	96.55	24		1	3					1																						
Penicillins																																		
Ampicillin		29	0.00																		2	3	2	3	4	5	6	4						

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 4

37 = 6

38 = 6

39 = 2

40 = 1
41 = 1

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
S. Derby																																		
all animals																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		37																																
		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Antimicrobials:		37	67.57%	25										1	2	1	2	2	1	1			2											
Tetracycline																																		
Amphenicols																																		
Chloramphenicol		37	2.70	1															1		1	6	9	7	7	1	3	1						
Cephalosporin																																		
Cephalothin		37	0.00										1			1		1	1	3	1	4	9	9	3	4								
Cefotaxim(2)		37	0.00																						1			2		3	7	4	6	
Fluoroquinolones																																		
Ciprofloxacin(1)		37	0.00																		1	3	3	1	3	1	1	1		1	1	2	3	7
Enrofloxacin		37	0.00														1	2	3	2	1	1		1		1	1	6	3	3	2	6	1	3
Quinolones																																		
Nalidixic acid		37	24.32	9															1	6	3	3	4	4	4		1	1	1					
Trimethoprim		37	8.11%	3									2	1	1	1	3	1	3	1	1	2	4		1	2	1	2	1					
Sulfonamides																																		
Sulfonamide		36	77.78	22				1	2	3							1		1	2		1	1		2									
Aminoglycosides																																		
Streptomycin		37	37.84	12			1		1			1	3	6	4	2	5	1		1														
Gentamicin		37	2.70					1							1				3	10		12	4	4	1	1								
Neomycin		37	0.00														1	5	7	6	9	4	1	4										
Kanamycin		37	0.00																1	3	10	8	7	4	4									
Penicillins																																		
Ampicillin		37	10.81	4															2		1	3	1	3	8	9	3	1	2					

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 6

37 = 3

38 = 2

39 = -

40 = 2
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 8
37 = 5
38 = -
39 = 1

123

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 14
 37 = 7
 38 = 5
 39 = 3

40 = -
41 = -
42 = 2
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 13
37 = 7
38 = 4
39 = 1
40 = 1
41 = -
42 = 1

Table 3.2.5.2 Antimicrobial susceptibility testing of S.Enteritidis in animals (Part A)

S. Enteritidis																				
	Cattle (bovine animals)	Pigs	Sheep	Water buffalos	Rabbits	Gallus gallus	Turkeys	Guinea fowl	Other animals	Poultry										
Isolates out of a monitoring program	no	no	no	no	no		no	no	no	no										
Number of isolates available in the laboratory	6	3	1	1	3		1	1	53	144										
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R								
Tetracycline	4	0.00%	3	33.33%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	26	0.00%	101	4.95%		
Amphenicols																				
Chloramphenicol	4	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	24	0.00%	101	0.00%		
Cephalosporin																				
Cephalothin	4	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	19	0.00%	93	2.15%		
Cefotaxim	4	0.00%	3	33.33%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	26	0.00%	101	0.00%		
Fluoroquinolones																				
Ciprofloxacin	4	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	26	0.00%	101	0.00%		
Enrofloxacin	4	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	26	0.00%	101	0.99%		
Quinolones																				
Nalidixic acid	4	0.00%	3	33.33%	1	0.00%	1	100%	2	0.00%			1	0.00%	26	3.85%	101	20.79%		
Trimethoprim	4	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	25	32.00%	99	8.08%		
Sulfonamides																				
Sulfonamide	4	25%	3	66.67%	1	0.00%	1	100%	2	50.00%			1	0.00%	26	23.077%	101	29.70%		
Aminoglycosides																				
Streptomycin	4	0.00%	3	0.00%	1	0.00%	1	100%	2	0.00%			1	0.00%	25	4.00%	101	14.85%		
Gentamicin	4	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	26	0.00%	101	0.00%		
Neomycin	3	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	23	0.00%	96	0.00%		
Kanamycin	4	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	26	0.00%	101	0.00%		
Penicillins																				
Ampicillin	4	0.00%	3	33.33%	1	0.00%	1	0.00%	2	0.00%			1	0.00%	25	4.00%	101	4.95%		
Number of multiresistant isolates																				
fully sensitives	3	66.67%	3	33.33%	1	100%	1	0.00%	2	50%			1	100%	1	0.00%	18	38.89%	91	49.45%

resistant to 1 antimicrobial	3	33.33%	3	33.33%	1	0.00%	1	0.00%	1	100%	18	50%	91	16.68%
resistant to 2 antimicrobials	3	0.00%	3	0.00%	1	0.00%	1	0.00%	1	0.00%	18	11.11%	91	29.67%
resistant to 3 antimicrobials	3	0.00%	3	0.00%	1	0.00%	1	100%	2	0.00%	18	0.00%	91	1.10%
resistant to 4 antimicrobials	3	0.00%	3	0.00%	1	0.00%	1	0.00%	2	0.00%	18	0.00%	91	1.10%
resistant to >4 antimicrobials	3	0.00%	3	33.33%	1	0.00%	1	0.00%	2	0.00%	18	0.00%	91	0.00%

Footnote

Data source: NRC-SALM

Table 3.2.5.2 Antimicrobial susceptibility testing of *S. Enteritidis* in animals (Part B)

<i>S. Enteritidis</i>			
	Shellfish		
Isolates out of a monitoring program		no	
Number of isolates available in the laboratory		3	
Antimicrobials:	N		%R
Tetracycline	3		0.00%
Amphenicols			
Chloramphenicol	3		0.00%
Cephalosporin			
Cephalothin	3		0.00%
Cefotaxim	3		0.00%
Fluoroquinolones			
Ciprofloxacin	3		0.00%
Enrofloxacin	3		0.00%
Quinolones			
Nalidixic acid	3		33.33%
Trimethoprim	3		0.00%
Sulfonamides			
Sulfonamide	3		3.33%
Aminoglycosides			
Streptomycin	3		0.00%
Gentamicin	3		0.00%
Neomycin	3		0.00%
Kanamycin	3		0.00%
Penicillins			
Ampicillin	3		0.00%
Number of multiresistant isolates			
fully sensitive	3		33.33%
resistant to 1 antimicrobial	3		66.67%

resistant to 2 antimicrobials	3	0.00%
resistant to 3 antimicrobials	3	0.00%
resistant to 4 antimicrobials	3	0.00%
resistant to >4 antimicrobials	3	0.00%

Footnote

Data source: NRC-SALM

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																				
S. Enteritidis																																				
all animals																																				
Isolates out of a monitoring program		no																																		
Number of isolates available in the laboratory		29																																		
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35			
Tetracycline		29	0.00%											1		1	5	3	2	8	5	1		2				1								
Amphenicols																																				
Chloramphenicol		29	0.00																			2	2	4	8	9	2	1					1			
Cephalosporin																																				
Cephalothin		29	0.00																	1	1	10	4	3	7	1	1					1				
Cefotaxim(2)																												1	1	1	2	4	3	3		
Fluoroquinolones																																				
Ciprofloxacin(1)		29	0.00																																	
Enrofloxacin		29	0.00														1			1	3	2		3		2	1	1	2	1			3	2		
Quinolones																																				
Nalidixic acid		29	41.18	7													9	4	5	1	1	1											1			
Trimethoprim		29	0.00%																1	5	7	2	1	1	4	2	3	1	2							
Sulfonamides																																				
Sulfonamide		29	41.18	14			2		1	1	2		1				1		1	1	1		1	1	3											
Aminoglycosides																																				
Streptomycin		29	0.00	8				2					2			4	2	6	3	1	1															
Gentamicin		29	0.00																																	
Neomycin		29	0.00													1			3	2	9	6	2	3	2		1									
Kanamycin		29	0.00																3	1	2	7	6	2	6	1	1									
Penicillins																																				
Ampicillin		29	0.00																		3	10	3	6	3	3							1			

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 5

37 = 6

38 = 3

39 = -

40 = 1
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 7
37 = 2
38 = 2
39 = -
40 = 1
41 = 1
42 = 1

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																				
S. Enteritidis																																				
Poultry meat																																				
Isolates out of a monitoring program		no																																		
Number of isolates available in the laboratory		24																																		
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35			
Tetracycline		24	0.00%											1		1	3	5	2	2	3	3	1			1	1	1								
Amphenicols																																				
Chloramphenicol		24	0.00																			2	3	5	4	8	1	1								
Cephalosporin																																				
Cephalothin		24	0.00																			4	7	2	3	5	3									
Cefotaxim(3)		24	0.00																										1		2	4	4			
Fluoroquinolones																																				
Ciprofloxacin(1)		24	0.00																									2		2	1	3	2			
Enrofloxacin(2)		24	0.00																	2					1	5	2	3	5	2	1		2			
Quinolones																																				
Nalidixic acid		5	0.00																2	1	1	1														
Trimethoprim		23	0.00%												1				1			1	3	2	5	3	1	2	2	1	1					
Sulfonamides																																				
Sulfonamide		23	26.09	6							1	1	1		1	1		1			3	2	4	1			1									
Aminoglycosides																																				
Streptomycin		23	8.70	1				1						1				4	7	4	5															
Gentamicin		24	0.00														1			1	4	2	7	3	2	2	2									
Neomycin		24	0.00																1	5	2	4	5	4	1	1	1									
Kanamycin		24	0.00																	1	1	5	6	5	5			1								
Penicillins																																				
Ampicillin		24	0.00																	1	5	1	3	2	7		5									

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 5

37 = 2

38 = 4

39 = 1

40	=	1
41	=	-
42	=	-
43	=	-
44	=	1
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.		
Other values:		
36	=	-
37	=	1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.		
Other values:		
36	=	4
37	=	2
38	=	4
39	=	1
40	=	1
41	=	1

133

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 2

37 = 2

38 = 4

39 = 2

40 = 3
41 = 1

Table Antimicrobial susceptibility testing of *S. Hadar* in all foodstuffs - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																			
S. Hadar																																			
all foodstuffs																																			
Isolates out of a monitoring program		no																																	
Number of isolates available in the laboratory		53																																	
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
Tetracycline		53	77.36%	28	2	6	4		1						2	6	3	1																	
Amphenicols																																			
Chloramphenicol		53	1.89	1																		1	1	5	5	17	12	8	3						
Cephalosporin																																			
Cephalothin		53	37.74						1		11	8	12	14	2						1			1		2		1							
Cefotaxim(1)		53	0.00																								1	2	2	2	8	5	14		
Fluoroquinolones																																			
Ciprofloxacin		53	0.00																			2	1	6	12	11	9	10	2						
Enrofloxacin		53	5.66											3	10		12	8	8	3	2	2	1	1	1	2									
Quinolones																																			
Nalidixic acid		53	94.34	50												1	1	1																	
Trimethoprim		53	5.66%	3										1		1	2	1	4	2	5	6	4	6	1	8	4		2	2	1				
Sulfonamides																																			
Sulfonamide		53	66.04	15	1	3	4	2	7	3	1	4	1	1	2						1	3	1	1	2	1									
Aminoglycosides																																			
Streptomycin		53	60.38	2		1	4	15	10	5		1	1	5	2	2	5																		
Gentamicin		53	1.89	1														1	1	7	8	14	10	8	2	1									
Neomycin		53	0.00													2	1	1	3	10	11	9	12	4											
Kanamycin		53	0.00															1	2	12	13	15	7	3											
Penicillins																																			
Ampicillin		53	90.57	47	1																	1	1	1	1		2								

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 8

37 = 6

38 = 4

39 = 1

136

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to. Other values:
36 = 3
37 = 3
38 = 1

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:
36 = 2

138

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 10
 37 = 9
 38 = 6
 39 = 6

40 = -	
41 = 3	
42 = -	
43 = 1	
44 = -	
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.	
Other values:	
36 = 3	
37 = -	
38 = 3	
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.	
Other values:	
36 = 17	
37 = 14	
38 = 6	
39 = 3	
40 = 2	
41 = 1	

Table Antimicrobial susceptibility testing of *S. Livingstone* in all foodstuffs - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
S. Livingstone																																		
all foodstuffs																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		48																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		48	8.33%	3								1		1	2	8	7	8	2	2	2	1	3	3		4		1						
Amphenicols																																		
Chloramphenicol		48	2.08	1																		6	13	17	5	5		1						
Cephalosporin																																		
Cephalothin		48	0.00																	4	2	4	6	14	6	6	5	1						
Cefotaxim(3)		48	0.00																										1	3		8	9	
Fluoroquinolones																																		
Ciprofloxacin(1)		48	0.00																									1	1	9	5	7	4	
Enrofloxacin(2)		48	0.00																								7	3	7	9	9	2	2	
Quinolones																																		
Nalidixic acid		48	0.00															2	1	7	12	5	7	5	3	2	3	1						
Trimethoprim		48	0.00%													1		2	2	1	1		1	1		3	8	8	10	6	3		1	
Sulfonamides																																		
Sulfonamide		48	29.17	4		1	2	3	3	1	1	1				5	3	2	3	3	7	4	2	2	1									
Aminoglycosides																																		
Streptomycin		48	2.08	1						1		1	2	4	9	8	13	3	2	4														
Gentamicin		48	0.00																1	4	4	4	6	15	6	5	3							
Neomycin		48	0.00												1			2	1	6	5	8	10	6	6	1	2							
Kanamycin		48	0.00																1	3	6	5	12	13	4	2	1	1						
Penicillins																																		
Ampicillin		48	2.08	1																		1	3	8	10	8	9	6	1	1				

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 10

37 = 3

38 = 2

39 = 3

40 = 1
41 = -
42 = -
43 = -
44 = 2
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 3
37 = 1
38 = 4
39 = 1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 14
37 = 5
38 = 2
39 = 4
40 = 2

Table Antimicrobial susceptibility testing of S. London in all foodstuffs - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
S. London																																		
all foodstuffs																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		43																																
		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Antimicrobials:		43	23.26%	5		1	2	1				1	1	4	6	5	4	1		2		2		2	4		1	1	2					
Tetracycline																																		
Amphenicols											1									1		1	1	1	1	1	1	2						
Chloramphenicol		43	0.00																															
Cephalosporin																																		
Cephalothin		43	0.00																	4	1	4	5	13	8	7		1						
3rd generation cephalosporins		43	0.00																															
Cefotaxim(3)																					1									2	3	5	10	
Fluoroquinolones																																		
Ciprofloxacin(1)		43	0.00																										1	1	3	5	12	
Enrofloxacin(2)		43	0.00																								7	3	6	8	9	1	1	
Quinolones																																		
Nalidixic acid		43	0.00															4	5	9	6	8	3	2	3	3								
Trimethoprim		43	11.63%	5										1			1		1	5	6	7	3	1	2	4	6	1						
Sulfonamides																																		
Sulfonamide		43	55.81	13	1	1	1	2	1	2	4	1	2	1	1	1	1	1	2	5	1	2	1											
Aminoglycosides																																		
Streptomycin		43	4.65	2									4	3	9	17	4	2	1			1												
Gentamicin		43	0.00																	5	8	15	8	3	3	1								
Neomycin		42	0.00														1	6	2	3	10	13	5	1	1									
Kanamycin		34	0.00																1	5	9	10	5	2	2									
Penicillins																																		
Ampicillin		43	11.63	5														1			1	2	4	9	7	6	7	1						

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 8

37 = 3

38 = 3

39 = 5
40 = 1
41 = -
42 = -
43 = 1
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 3
37 = 1
38 = 3
39 = 1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 8
37 = 6
38 = 3
39 = 3
40 = 1
41 = 1

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																					
<i>S. Thompson</i>																																					
all animals																																					
Isolates out of a monitoring program	no																																				
		41																																			
Number of isolates available in the laboratory		41																																			
		2.44%																																			
Antimicrobials:	N	%R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Tetracycline	41	2.44%	1	4	9	7	3	6	3	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Amphenicols	41	0.00	1																																		
Chloramphenicol	41	0.00	1																																		
Cephalosporin	41	0.00																																			
Cephalothin	41	0.00																																			
Cefotaxim(3)	41	0.00																																			
Fluoroquinolones	41	0.00																																			
Ciprofloxacin(1)	41	0.00																																			
Enrofloxacin(2)	41	0.00																																			
Quinolones	41	0.00																																			
Nalidixic acid	41	0.00%																																			
Trimethoprim	41	0.00%																																			
Sulfonamides	41	0.00																																			
Sulfonamide	41	0.00																																			
Aminoglycosides	41	0.00																																			
Streptomycin	41	0.00																																			
Gentamicin	41	0.00																																			
Neomycin	41	0.00																																			
Kanamycin	41	2.44																																			
Penicillins	41	7.32																																			
Ampicillin(4)	41	7.32																																			

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 5

37 = -

38 = 5

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:
36 = 1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 7
37 = 10
38 = 4
39 = 5
40 = 1
41 = 1
(4) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = -
37 = 1

Table 3.2.5.3 Antimicrobial susceptibility testing of *S. Typhimurium* in animals (Part A)

S. Typhimurium														
	Cattle (bovine animals)	Pigs	Sheep	Goats	Water buffalos	Rabbits	Gallus gallus	Ducks	Turkeys	Quails				
Isolates out of a monitoring program	no	no	no	no	no	no		no	no	no				
Number of isolates available in the laboratory	113	430	8	2	3	32		9	68	11				
Antimicrobials:														
Tetracycline	N 82 %R 91.46%	N 216 %R 80.56%	N 3 %R 66.67%	N 2 %R 100%	N 3 %R 100%	N 2 %R 61.90%	N %R 28.57%	N 7 %R 96.36%	N 55 %R 66.67%					
Amphenicols														
Chloramphenicol	N 82 %R 69.51%	N 215 %R 32.56%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 0.00%	N 21 %R 38.10%		N 7 %R 14.29%	N 55 %R 16.36%	N 9 %R 100%				
Cephalosporin														
Cephalothin	N 80 %R 5.00%	N 210 %R 3.33%	N 3 %R 33.33%	N 2 %R 100%	N 3 %R 66.67%	N 18 %R 5.56%		N 7 %R 0.00%	N 55 %R 85.45%	N 9 %R 0.00%				
Cefotaxim	N 82 %R 0.00%	N 216 %R 0.00%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 0.00%	N 21 %R 0.00%		N 7 %R 0.00%	N 55 %R 1.82%	N 9 %R 0.00%				
Fluoroquinolones														
Ciprofloxacin	N 81 %R 0.00%	N 216 %R 0.46%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 0.00%	N 21 %R 0.00%		N 7 %R 0.00%	N 55 %R 0.00%	N 9 %R 0.00%				
Enrofloxacin	N 82 %R 0.00%	N 216 %R 0.93%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 0.00%	N 21 %R 0.00%		N 7 %R 0.00%	N 55 %R 0.00%	N 9 %R 11.11%				
Quinolones														
Nalidixic acid	N 82 %R 6.10%	N 216 %R 10.19%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 0.00%	N 21 %R 14.29%		N 7 %R 14.29%	N 55 %R 81.82%	N 9 %R 100%				
Trimethoprim	N 82 %R 10.98%	N 207 %R 20.29%	N 3 %R 0.00%	N 2 %R 100%	N 3 %R 0.00%	N 21 %R 14.29%		N 7 %R 14.29%	N 55 %R 5.45%	N 9 %R 0.00%				
Sulfonamides														
Sulfonamide	N 81 %R 90.12%	N 216 %R 81.94%	N 3 %R 33.33%	N 2 %R 100%	N 3 %R 0.00%	N 21 %R 42.86%		N 7 %R 28.57%	N 55 %R 96.36%	N 9 %R 100%				
Aminoglycosides														
Streptomycin	N 82 %R 89.02%	N 216 %R 70.83%	N 3 %R 33.33%	N 2 %R 50.00%	N 3 %R 100%	N 21 %R 61.90%		N 7 %R 28.57%	N 55 %R 89.09%	N 9 %R 55.56%				
Gentamicin	N 82 %R 1.22%	N 216 %R 1.39%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 33.33%	N 21 %R 0.00%		N 7 %R 14.29%	N 55 %R 1.82%	N 9 %R 33.33%				
Neomycin	N 81 %R 2.47%	N 199 %R 2.51%	N 3 %R 33.33%	N 2 %R 0.00%	N 3 %R 66.67%	N 18 %R 0.00%		N 7 %R 0.00%	N 55 %R 14.55%	N 9 %R 0.00%				
Kanamycin	N 82 %R 2.44%	N 216 %R 0.46%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 0.00%	N 21 %R 0.00%		N 7 %R 14.29%	N 55 %R 14.55%	N 9 %R 88.89%				
Penicillins														
Ampicillin	N 82 %R 89.02%	N 216 %R 66.20%	N 3 %R 33.33%	N 2 %R 100%	N 3 %R 0.00%	N 21 %R 47.62%		N 7 %R 28.57%	N 55 %R 85.45%	N 9 %R 100%				
Number of multiresistant isolates														
fully sensitive	N 78 %R 6.41%	N 189 %R 6.35%	N 3 %R 0.00%	N 2 %R 0.00%	N 3 %R 0.00%	N 18 %R 22.22%		N 7 %R 57.14%	N 55 %R 0.00%	N 9 %R 0.00%				

resistant to 1 antimicrobial	78	0.00%	189	10.05%	3	66.67%	2	0.00%	3	0.00%	18	16.67%			7	0.00%	55	0.00%	9	0.00%
resistant to 2 antimicrobials	78	0.00%	189	3.70%	3	0.00%	2	0.00%	3	0.00%	18	5.56%			7	0.00%	55	0.00%	9	0.00%
resistant to 3 antimicrobials	78	1.28%	189	12.17%	3	0.00%	2	0.00%	3	33.33%	18	5.56%			7	14.29%	55	33.33%	9	0.00%
resistant to 4 antimicrobials	78	15.38%	189	23.28%	3	0.00%	2	0.00%	3	0.00%	18	11.11%			7	14.29%	55	0.00%	9	0.00%
resistant to >4 antimicrobials	78	76.92%	189	44.44%	3	33.33%	2	100%	3	66.67%	18	38.89%			7	14.29%	55	66.67%	9	100%
Number of multiresistant DT104																				
with penta resistance	52	88.46%	38	78.95%			1	0.00%			6	50%			1	0.00%	8	0.00%		
resistant to other antimicrobials	52	11.54%	38	21.05%			1	100%			6	50%			1	100%	8	100%		

Footnote

Data source: NRC-SALM

Table 3.2.5.3 Antimicrobial susceptibility testing of *S. Typhimurium* in animals (Part B)

S. Typhimurium											
	Pigeons	Solipeds	Other animals		Poultry		Shellfish				
Isolates out of a monitoring program	no	no	no	no	no	no	no	no			
Number of isolates available in the laboratory	64	8	205	55	11						
Antimicrobials:	N	%R	N	%R	N	%R	N	%R			
Tetracycline	29	6.90%	7	100.00%	101	68.32%	37	56.76%	4	75.00%	
Amphenicols											
Chloramphenicol	29	3.45%	7	0.00%	101	29.70%	37	10.81%	4	100.00%	
Cephalosporin											
Cephalothin	27	0.00%	7	0.00%	94	5.32%	37	1.82%	4	50.00%	
Cefotaxim	29	0.00%	7	0.00%	101	0.00%	37	0.00%	3	0.00%	
Fluoroquinolones											
Ciprofloxacin	29	0.00%	7	0.00%	101	0.00%	37	0.00%	3	0.00%	
Enrofloxacin	29	0.00%	7	0.00%	101	1.98%	37	5.41%	3	0.00%	
Quinolones											
Nalidixic acid	29	0.00%	7	100.00%	101	15.84%	37	27.03%	3	0.00%	
Trimethoprim	28	7.14%	7	0.00%	99	16.16%	36	5.56%	3	0.00%	
Sulfonamides											
Sulfonamide	29	31.03%	7	100.00%	101	64.36%	37	76.68%	4	75.00%	
Aminoglycosides											
Streptomycin	29	31.03%	7	100.00%	100	55.00%	37	54.05%	4	100.00%	
Gentamicin	29	0.00%	7	0.00%	101	2.97%	37	0.00%	3	0.00%	
Neomycin	28	0.00%	7	0.00%	98	2.04%	32	9.38%	3	66.67%	
Kanamycin	29	0.00%	7	0.00%	101	0.99%	37	8.11%	3	0.00%	
Penicillins											
Ampicillin	29	10.34%	7	100.00%	101	55.45%	37	54.05%	4	100.00%	
Number of multiresistant isolates											
fully sensitive	27	51.85%	7	0.00%	92	20.65%	32	18.75%	2	0.00%	
resistant to 1 antimicrobial	27	33.33%	7	0.00%	92	17.39%	32	18.75%	2	0.00%	

resistant to 2 antimicrobials	27	3.70%	7	0.00%	92	3.26%	32	15.63%	2	0.00%
resistant to 3 antimicrobials	27	3.70%	7	0.00%	92	5.43%	32	6.25%	2	0.00%
resistant to 4 antimicrobials	27	3.70%	7	0.00%	92	10.87%	32	9.38%	2	0.00%
resistant to >4 antimicrobials	27	3.70%	7	100.00%	92	42.39%	32	31.25%	2	100.00%
Number of multiresistant DT104										
with penta resistance					9	33.33%	1	100.00%	1	0.00%
resistant to other antimicrobials					9	66.66%	1	0.00%	1	100.00%

Footnote

Data source: NRC-SALM

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																						
<i>S. Typhimurium</i>																																						
all animals																																						
Isolates out of a monitoring program	no																																					
	196																																					
Number of isolates available in the laboratory																																						
Antimicrobials:	N	%R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline	196	72.96%	89	3	8	20	15	4	3		1	1	1	2	6	5	5	5	5	5	6	2	4	2	2	2	4	2	2	2	2	1	1					
Amphenicols	196	36.22	70				1														1	2	10	17	23	26	26	10	7	2	1							
Cephalosporin	196	0.00																																				
Cephalexin	196	0.00																		2	2	8	18	35	21	45	20	14	8	10	8	3	2					
Cefotaxim(3)	196	0.00																							2								1	2	7	15	25	40
Fluoroquinolones	196	0.00																																				
Ciprofloxacin(1)	196	0.00																																				
Enrofloxacin(2)	196	0.00																			5	14	10	16	13	4		4	4	15	17	12	19	22	21	12	2	
Quinolones	196	31.63	62																																			
Nalidixic acid	196	3.57%	7										1		3	5	3	7	2	5	8	8	10	16	29	21	16	9	9	7	5	14	7	3	1			
Trimethoprim	196	0.00																																				
Sulfonamides	196	78.06	127		7	5	8	5	1	2	2																											
Sulfonamide	196	78.06	127		7	5	8	5	1	2	2																											
Aminoglycosides	196	68.37	91	3	12	14	10	4	3		4	17	11	9	9	3	4	1	1																			
Streptomycin	196	0.00																																				
Gentamicin	196	3.57																																				
Neomycin	196	4.59	6		1	1	1		1																													
Kanamycin	196	4.59	6		1	1	1		1																													
Penicillins	194	71.13	135		1	1	1																															
Ampicillin	194	71.13	135		1	1	1																															

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 21

37 = 19

38 = 12

39 = 11

40 = 9
41 = 5
42 = 2
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 2
37 = 2
38 = 1
39 = -
40 = -
41 = 1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 29
37 = 38
38 = 18
39 = 12
40 = -
41 = 2
42 = -
43 = 1
44 = 1
45 = -
46 = 1

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																						
<i>S. Typhimurium</i>																																						
all foodstuffs																																						
Isolates out of a monitoring program	no																																					
	161																																					
Number of isolates available in the laboratory	161																																					
Antimicrobials:	N	%R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline	161	80.12%	79	3	8	6	19	10	3							1	4	4	3	1	4	2	4	2	1	2		1		2	1	1						
Amphenicols	161	39.75	63		1													1			2	2	1	1	1	7	6	15	20	22	13	5	1					
Chloramphenicol	161																																					
Cephalosporin	143	0.00														1				4	3	14	18	11	20	26	15	16	6	8			1					
Cephalothin	161	0.00																												1	3	3	3	5	9	10	17	30
Cefotaxim(3)	161	0.00																																				
Fluoroquinolones	161	0.00																				1	1	1	1	1		2	5	4	7	4	4	4	9	11	17	
Ciprofloxacin(1)	159	0.63														1				3	1	2	5	6	3	2	3	2	5	9	20	14	27	20	17	7	3	5
Enrofloxacin(2)																																						
Quinolones	161	16.15	26																	1	2	6	19	19	28	16	23	15	2	1	1	2						
Nalidixic acid	161	9.32%	14														5	5	8	5	4	12	4	18	13	14	11	14	11	1	3	3	6	1				
Trimethoprim																																						
Sulfonamides	161	85.09	110		3	4	8	6	6							2	1	1	1	2		5	2	2	1	1		1	1	3		1		1				
Sulfonamide																																						
Aminoglycosides	161	65.84	83		6	3	9	5	6	2	3	6	11								18	2	1															
Streptomycin	161	3.73				1	2	1	2	3		1								1	2	4	10	11	24	25	33	27	10	2	1	1						
Gentamicin	161	1.24																		3	5	14	22	21	34	21	25	11	2			1						
Neomycin	161	5.59	2																																			
Kanamycin																																						
Penicillins	161	71.43	113																																			
Ampicillin																																						

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 25

37 = 26

38 = 14

39 = 7

40 = 3
41 = 4
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 1
37 = -
38 = 2
39 = 1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 26
37 = 23
38 = 14
39 = 11
40 = 5
41 = -
42 = -
43 = -
44 = -
45 = -
46 = 1

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
<i>S. Virchow</i>																																		
all animals																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		9																																
		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Antimicrobials:		9	33.33%	1			1					1						3		1		2												
Tetracycline																																		
Amphenicols																																		
Chloramphenicol		9	11.11	1																		1		2		3	2							
Cephalosporin																																		
Cephalothin		9	0.00															1	1			2		1	2	1		1						
Cefotaxim(2)		9	0.00																										2		1	2		
Fluoroquinolones																																		
Ciprofloxacin(1)		9	0.00														1														2		1	
Enrofloxacin		9	11.11									1							1	2	1													
Quinolones																																		
Nalidixic acid		9	55.56	5														1		1					2									
Trimethoprim		9	22.22%	2									1						1	1			1					3						
Sulfonamides																																		
Sulfonamide		9	77.78	4						1	2	1														1								
Aminoglycosides																																		
Streptomycin		9	11.11					1																										
Gentamicin		9	0.00																	3	2			2										
Neomycin		9	0.00											1	1				1		3		2											
Kanamycin		9	0.00																	2	2	1	3	1										
Penicillins																																		
Ampicillin		9	22.22	2															1													2		

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = -

37 = -

38 = -

39 = 1

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = -
37 = 1
38 = 1
39 = 1
40 = -
41 = 1

Table 3.2.5.1 Antimicrobial susceptibility testing of *Salmonella* spp. in animals (Part A)

Salmonella spp.																		
	Cattle (bovine animals)	Pigs	Sheep	Goats	Water buffalos	Rabbits	Gallus gallus	Ducks	Turkeys	Guinea fowl								
Isolates out of a monitoring program	no	no	no	no	no	no		no	no	no								
Number of isolates available in the laboratory	190	1248	94	5	18	46		20	299	28								
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R		
Tetracycline	126	73.81%	679	64.06%	50	8.00%	4	75%	16	25%	31	51.61%	15	53.33%	204	76.96%	19	73.68%
Amphenicols																		
Chloramphenicol	126	45.24%	679	13.84%	50	0.00%	4	0.00%	16	6.25%	31	29.03%	15	13.33%	204	5.88%	19	0.00%
Cephalosporin																		
Cephalothin	122	6.56%	661	2.57%	50	2.00%	4	75%	16	25%	28	7.14%	14	7.14%	200	1.00%	19	10.53%
Cefotaxim	126	0.00%	680	0.29%	50	0.00%	4	0.00%	16	0.00%	31	0.00%	15	0.00%	204	0.49%	19	0.00%
Fluoroquinolones																		
Ciprofloxacin	125	0.00%	680	0.15%	50	0.00%	4	0.00%	15	0.00%	31	0.00%	15	0.00%	204	0.00%	19	0.00%
Enrofloxacin	126	0.00%	680	0.44%	50	0.00%	4	0.00%	16	0.00%	31	0.00%	15	0.00%	204	2.45%	19	0.00%
Quinolones																		
Nalidixic acid	126	13.49%	680	7.65%	50	0.00%	4	25%	15	20%	31	19.35%	15	26.67%	204	79.41%	19	63.16%
Trimethoprim	123	8.13%	667	18.14%	50	2.00%	4	50%	16	6.25%	31	9.68%	14	7.14%	204	6.86%	19	0.00%
Sulfonamides																		
Sulfonamide	125	68%	680	67.65%	50	12%	4	50%	16	56.25%	31	41.94%	15	33.33%	204	58.82%	19	31.58%
Aminoglycosides																		
Streptomycin	126	71.43%	680	50%	50	18%	4	50%	16	62.50%	31	51.61%	15	26.67%	204	59.31%	19	63.16%
Gentamicin	126	0.79%	679	2.50%	50	0.00%	4	0.00%	16	6.25%	31	0.00%	15	6.67%	204	2.45%	19	0.00%
Neomycin	120	5.83%	652	7.82%	50	4.00%	4	0.00%	16	25%	28	0.00%	15	6.67%	203	36.95%	19	38.89%
Kanamycin	126	6.35%	680	7.06%	50	2.00%	4	0.00%	16	6.25%	31	0.00%	15	13.33%	204	39.22%	19	47.37%
Penicillins																		
Ampicillin	126	65.08%	680	36.32%	50	4.00%	4	75%	16	6.25%	31	41.94%	15	40%	204	36.27%	19	21.05%
Number of multiresistant isolates																		
fully sensitives	116	16.38%	630	16.98%	50	72%	4	25%	15	6.67%	28	25%	14	35.71%	200	5.00%	18	5.56%

resistant to 1 antimicrobial	116	6.90%	630	18.41%	50	20%	4	0.00%	15	20%	28	25%			14	7.14%	200	9.00%	18	11.11%
resistant to 2 antimicrobials	116	0.86%	630	7.14%	50	0.00%	4	0.00%	15	13.33%	28	3.57%			14	14.29%	200	9.50%	18	5.56%
resistant to 3 antimicrobials	116	1.72%	630	16.35%	50	2.00%	4	0.00%	15	26.67%	28	3.57%			14	7.14%	200	6.00%	18	11.11%
resistant to 4 antimicrobials	116	14.66%	630	15.87%	50	2.00%	4	0.00%	15	6.67%	28	10.71%			14	14.29%	200	19.50%	18	22.22%
resistant to >4 antimicrobials	116	59.48%	630	25.24%	50	4.00%	4	75%	15	26.67%	28	32.14%			14	21.43%	200	51%	18	44.44%

Footnote

Data source: NRC-SALM

Table 3.2.5.1 Antimicrobial susceptibility testing of *Salmonella* spp. in animals (Part B)

Salmonella spp.												
	Quails		Pigeons		Solipeds		Other animals		Poultry		Shellfish	
Isolates out of a monitoring program	no		no		no		no		no		no	
Number of isolates available in the laboratory	20		69		17		1270		1217		50	
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R
Tetracycline	9	66.67%	32	12.50%	15	60.00%	510	37.25%	691	25.18%	28	21.43%
Amphenicols												
Chloramphenicol	9	100.00%	32	9.38%	15	0.00%	508	7.28%	694	1.73%	28	17.86%
Cephalosporin												
Cephalothin	9	0.00%	30	0.00%	12	8.33%	478	3.14%	661	6.66%	26	7.69%
Cefotaxim	9	0.00%	32	0.00%	15	6.67%	509	0.00%	694	1.59%	27	0.00%
Fluoroquinolones												
Ciprofloxacin	9	0.00%	32	0.00%	15	0.00%	510	0.00%	694	0.00%	27	0.00%
Enrofloxacin	9	11.11%	32	0.00%	15	6.67%	510	1.76%	693	3.90%	27	0.00%
Quinolones												
Nalidixic acid	9	100.00%	32	6.25%	15	66.67%	510	15.10%	693	26.98%	27	3.70%
Trimethoprim	9	0.00%	31	12.90%	15	6.67%	506	9.88%	678	6.78%	26	11.54%
Sulfonamides												
Sulfonamide	9	100.00%	32	37.50%	15	46.67%	510	41.18%	693	40.40%	28	32.14%
Aminoglycosides												
Streptomycin	9	55.56%	32	34.38%	15	73.33%	508	30.51%	694	21.76%	28	25.00%
Gentamicin	9	33.33%	32	0.00%	15	0.00%	510	2.94%	693	0.29%	27	0.00%
Neomycin	9	0.00%	31	6.45%	13	0.00%	499	7.01%	636	6.13%	25	16.00%
Kanamycin	9	88.89%	32	6.25%	15	0.00%	510	7.25%	694	7.35%	27	7.41%
Penicillins												
Ampicillin	9	100.00%	32	15.63%	15	60.00%	508	20.08%	694	23.05%	28	21.43%
Number of multiresistant isolates												
fully sensitive	9	0.00%	30	46.67%	12	16.67%	473	38.48%	602	40.03%	23	52.17%
resistant to 1 antimicrobial	9	0.00%	30	33.33%	12	16.67%	473	23.04%	602	22.59%	23	26.09%

resistant to 2 antimicrobials	9	0.00%	30	3.33%	12	0.00%	473	6.77%	602	10.80%	23	0.00%
resistant to 3 antimicrobials	9	0.00%	30	3.33%	12	8.33%	473	6.77%	602	5.81%	23	8.70%
resistant to 4 antimicrobials	9	0.00%	30	3.33%	12	0.00%	473	8.25%	602	7.81%	23	0.00%
resistant to >4 antimicrobials	9	100.00%	30	10.00%	12	58.33%	473	16.70%	602	12.96%	23	13.04%

Footnote

Data source: NRC-SALM

Table 3.2.5.5 Antimicrobial susceptibility testing of *Salmonella* spp. in food (Part A)

Salmonella spp.																
	Broiler meat	Turkey meat	Duck meat	Other poultry meat	Pig meat	Bovine meat	Meat from sheep	Goat meat	Horse meat	Rabbit meat						
	N	%R	N	%R	N	%R	N	%R	N	%R						
Isolates out of a monitoring program	no		no		no		no		no							
Number of isolates available in the laboratory	421	85	2	12	772	95	7	2	3	3						
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	N	%R						
Tetracycline	365	2932%	51	74.51%	2	0%	12	50%	415	56.87%	60	55%	5	20%	2	100%
Amphenicols																
Chloramphenicol	367	2.18%	51	3.92%	2	0%	12	58.33%	415	15.66%	60	15%	5	0%	2	0%
Cephalosporin																
Cephalothin	355	8.17%	48	2.08%	2	0%	11	0%	400	2.75%	57	8.77%	5	0%	2	100%
Cefotaxim	367	3%	51	1.96%	2	0%	12	0%	416	0.48%	60	0%	5	0%	2	0%
Fluoroquinolones																
Ciprofloxacin	367	0%	51	0%	2	0%	12	0%	416	0.24%	60	0%	5	0%	2	0%
Enrofloxacin	366	5.19%	51	1.96%	2	0%	12	8.33%	416	0.72%	60	0%	5	0%	2	0%
Quinolones																
Nalidixic acid	367	31.61%	51	52.94%	2	0%	12	66.67%	416	6.01%	60	21.67%	5	0%	2	100%
Trimethoprim	357	5.88%	51	15.69%	2	0%	12	8.33%	409	17.6%	57	10.53%	5	20%	2	0%
Sulfonamides																
Sulfonamide	366	34.43%	51	60.78%	2	0%	12	75%	416	63.94%	60	43.33%	5	20%	2	0%
Aminoglycosides																
Streptomycin	367	21.8%	51	47.06%	2	0%	12	50%	416	46.39%	60	58.33%	5	20%	2	100%
Gentamicin	366	0.55%	51	1.96%	2	0%	12	25%	415	1.45%	60	0%	5	0%	2	0%
Neomycin	320	7.5%	51	21.57%	2	0%	11	9.09%	398	6.28%	54	11.11%	5	0%	2	0%
Kanamycin	367	7.9%	51	31.37%	2	0%	12	58.33%	416	4.33%	60	8.33%	5	0%	2	0%
Penicillins																
Ampicillin	367	24.52%	51	39.22%	2	0%	12	58.33%	416	36.78%	60	36.67%	5	0%		
Number of multiresistant isolates																
fully sensitives	307	44.3%	48	4.17%	2	100%	11	9.09%	382	21.2%	52	19.23%	5	20%	2	0%

resistant to 1 antimicrobial	307	19.87%	48	8.33%	2	0%	11	9.09%	382	19.11%	52	17.31%	5	60%	2	0%	2	0%
resistant to 2 antimicrobials	307	7.82%	48	12.5%	2	0%	11	9.09%	382	6.28%	52	3.85%	5	0%	2	0%	2	0%
resistant to 3 antimicrobials	307	5.54%	48	14.58%	2	0%	11	0%	382	13.87%	52	5.77%	5	20%	2	0%	2	0%
resistant to 4 antimicrobials	307	7.82%	48	31.25%	2	0%	11	9.09%	382	14.4%	52	19.23%	5	0%	2	0%	2	0%
resistant to >4 antimicrobials	307	14.66%	48	29.17%	2	0%	11	63.64%	382	25.13%	52	34.62%	5	0%	2	100%	2	100%

Footnote

Data source: NRC-SALM

Table 3.2.5.5 Antimicrobial susceptibility testing of *Salmonella* spp. in food (Part B)

<i>Salmonella</i> spp.					
Live bivalve molluscs			Other food		
Isolates out of a monitoring program		no			no
Number of isolates available in the laboratory		47			476
Antimicrobials:	N	%R	N	%R	%R
Tetracycline	25	16%	192		57.29%
Amphenicols					
Chloramphenicol	25	16%	191		13.09%
Cephalosporin					
Cephalothin	23	4.35%	174		2.87%
Cefotaxim	25	0%	192		0%
Fluoroquinolones					
Ciprofloxacin	25	0%	192		0%
Enrofloxacin	25	0%	192		2.6%
Quinolones					
Nalidixic acid	25	0%	192		25%
Trimethoprim	24	12.5%	189		16.4%
Sulfonamides					
Sulfonamide	25	32%	192		50.52%
Aminoglycosides					
Streptomycin	25	24%	191		39.27%
Gentamicin	25	0%	192		1.56%
Neomycin	22	9.09%	185		9.19%
Kanamycin	25	4%	192		11.46%
Penicillins					
Ampicillin					
Number of multiresistant isolates					
fully sensitive	21	57.14%	171		19.3%
resistant to 1 antimicrobial	21	23.81%	171		23.39%

resistant to 2 antimicrobials	21		0%	171	7.6%
resistant to 3 antimicrobials	21		4.76%	171	11.7%
resistant to 4 antimicrobials	21		0%	171	7.02%
resistant to >4 antimicrobials	21		14.29%	171	30.99%

Footnote

Data source: NRC-SALM

Table Antimicrobial susceptibility testing of other serovars - qualitative data (Part A)

other serovars																				
	Cattle (bovine animals)	Pigs	Sheep	Goats	Water buffalos	Rabbits	Ducks	Turkeys	Guinea fowl	Pigeons										
Isolates out of a monitoring program	no	no	no	no	no	no	no	no	no	no										
Number of isolates available in the laboratory	71	815	85	3	14	11	11	230	26	5										
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R		
Tetracycline	40	45%	460	56.52%	46	4.35%	2	50%	12	8.33%	8	37.50%	8	75%	148	70.27%	18	77.78%	3	66.67%
Amphenicols																				
Chloramphenicol	40	0.00%	461	5.21%	46	0.00%	2	0.00%	12	8.33%	8	12.50%	8	12.50%	148	2.03%	18	0.00%	3	66.67%
Cephalosporin																				
Cephalothin	38	10.26%	448	2.23%	46	0.00%	2	50%	12	16.67%	8	12.50%	7	14.29%	144	0.69%	18	11.11%	3	0.00%
Cefotaxim	40	0.00%	461	0.22%	46	0.00%	2	0.00%	12	0.00%	8	0.00%	8	0.00%	148	0.00%	18	0.00%	3	0.00%
Fluoroquinolones																				
Ciprofloxacin	40	0.00%	461	0.00%	46	0.00%	2	0.00%	11	0.00%	8	0.00%	8	0.00%	148	0.00%	18	0.00%	3	0.00%
Enrofloxacin	40	0.00%	461	0.22%	46	0.00%	2	0.00%	12	0.00%	8	0.00%	8	0.00%	148	3.38%	18	0.00%	3	0.00%
Quinolones																				
Nalidixic acid	40	30%	461	6.29%	46	0.00%	2	50%	11	18.18%	8	37.50%	8	37.50%	148	79.05%	18	61.11%	3	66.67%
Trimethoprim	37	2.70%	457	17.29%	46	2.17%	2	0.00%	12	8.33%	8	0.00%	7	0.00%	148	7.43%	18	0.00%	3	66.67%
Sulfonamides																				
Sulfonamide	40	27.50%	461	60.95%	46	10.87%	2	0.00%	12	66.67%	8	37.50%	8	37.50%	148	45.27%	18	33.33%	3	100%
Aminoglycosides																				
Streptomycin	40	42.50%	461	40.56%	46	17.39%	2	50%	12	50%	8	37.50%	8	25%	148	48.65%	18	66.67%	3	66.67%
Gentamicin	40	0.00%	460	3.04%	46	0.00%	2	0.00%	12	0.00%	8	0.00%	8	0.00%	148	2.70%	18	0.00%	3	0.00%
Neomycin	36	13.89%	450	10.22%	46	2.17%	2	0.00%	12	16%	8	0.00%	8	12.50%	147	45.58%	17	41.18%	3	66.67%
Kanamycin	40	15%	461	10.20%	46	2.17%	2	0.00%	12	8.33%	8	0.00%	8	12.50%	148	48.65%	18	50%	3	66.67%
Penicillins																				
Ampicillin	40	22.50%	461	22.34%	46	2.17%	2	50%	12	8.33%	8	37.50%	8	50%	148	18.24%	18	22.22%	3	66.67%
Number of multiresistant isolates																				
fully sensitives	35	34.29%	438	21.46%	46	76.09%	2	50%	11	9.09%	8	25%	7	14.29%	144	6.25%	17	5.88%	3	0.00%

resistant to 1 antimicrobial	35	20%	438	21.92%	46	17.39%	2	0.00%	11	27.27%	8	37.50%	7	14.29%	144	12.50%	17	5.88%	3	33.33%
resistant to 2 antimicrobials	35	2.86%	438	8.68%	46	0.00%	2	0.00%	11	18.18%	8	0.00%	7	28.57%	144	11.81%	17	5.88%	3	0.00%
resistant to 3 antimicrobials	35	2.86%	438	18.26%	46	2.17%	2	0.00%	11	18.18%	8	0.00%	7	0.00%	144	6.25%	17	11.76%	3	0.00%
resistant to 4 antimicrobials	35	14.29%	438	12.79%	46	2.17%	2	0.00%	11	9.09%	8	12.50%	7	14.29%	144	21.53%	17	23.53%	3	0.00%
resistant to >4 antimicrobials	35	25.71%	438	16.89%	46	2.17%	2	50%	11	18.18%	8	25%	7	28.57%	144	41.67%	17	47.06%	3	66.67%

Footnote

Data source: NRC-SALM

Table Antimicrobial susceptibility testing of other serovars - qualitative data (Part B)

other serovars									
	Solipeds		Other animals		Poultry		Shellfish		
Isolates out of a monitoring program	no		no		no		no		no
Number of isolates available in the laboratory	8		1012		1018		36		36
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	
Tetracycline	8	25.00%	383	31.59%	553	26.76%	21	14.29%	
Amphenicols									
Chloramphenicol	8	0.00%	383	1.83%	556	1.44%	21	4.76%	
Cephalosporin									
Cephalothin	5	20.00%	365	2.74%	531	7.91%	19	0.00%	
Cefotaxim	8	12.50%	382	0.00%	556	1.98%	21	0.00%	
Fluoroquinolones									
Ciprofloxacin	8	0.00%	383	0.00%	556	0.00%	21	0.00%	
Enrofloxacin	8	12.50%	383	1.83%	555	4.32%	21	0.00%	
Quinolones									
Nalidixic acid	8	37.50%	383	15.67%	555	28.11%	21	0.00%	
Trimethoprim	8	12.50%	382	6.81%	543	6.63%	20	15.00%	
Sulfonamides									
Sulfonamide	8	0.00%	383	36.29%	555	40.00%	21	23.81%	
Aminoglycosides									
Streptomycin	8	50.00%	383	25.85%	556	20.86%	21	14.29%	
Gentamicin	8	0.00%	383	3.13%	555	0.36%	21	0.00%	
Neomycin	6	0.00%	378	8.73%	508	7.09%	19	10.53%	
Kanamycin	8	0.00%	383	9.40%	556	8.63%	21	9.52%	
Penicillins									
Ampicillin	8	25.00%	382	11.78%	556	24.28%	21	9.52%	
Number of multiresistant isolates									
fully sensitive	5	40.00%	363	42.98%	479	39.67%	18	61.11%	
resistant to 1 antimicrobial	5	40.00%	363	23.14%	479	23.59%	18	22.22%	

resistant to 2 antimicrobials	5	0.00%	363	7.44%	479	6.89%	18	0.00%
resistant to 3 antimicrobials	5	20.00%	363	7.44%	479	6.68%	18	11.11%
resistant to 4 antimicrobials	5	0.00%	363	7.99%	479	8.98%	18	0.00%
resistant to >4 antimicrobials	5	0.00%	363	11.02%	479	14.20%	18	5.56%

Footnote

Data source: NRC-SALM

168

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = -

37 = -

38 = -

39 = -

40 = -	
41 = -	
42 = -	
43 = 1	
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.	
Other values:	
36 = 71	
37 = 52	
38 = 34	
39 = 12	
40 = 6	
41 = 2	
42 = 1	
43 = 1	
44 = 2	
45 = -	
46 = 1	
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.	
Other values:	
36 = 8	
37 = 15	
38 = 1	
39 = 2	
40 = 1	
(4) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.	
Other values:	
36 = 58	
37 = 45	
38 = 29	
39 = 14	
40 = 11	
41 = 8	
42 = 1	
43 = -	
44 = -	
45 = 1	
46 = -	
47 = -	
48 = -	
49 = 1	
(5) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.	
Other values:	
36 = -	
37 = -	
38 = -	
39 = -	

171

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 27
37 = 18
38 = 8
39 = 4

40	=	3
41	=	1
42	=	-
43	=	1
44	=	2
45	=	-
46	=	2
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.		
Other values:		
36	=	3
37	=	3
38	=	-
39	=	1
(3) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.		
Other values:		
36	=	25
37	=	24
38	=	6
39	=	3
40	=	2
41	=	2

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

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
S. 4,5:i:-																																		
all foodstuffs																																		
Isolates out of a monitoring program		no																																
Number of isolates available in the laboratory		13																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		13	92.31%	11			1										1																	
Amphenicols																																		
Chloramphenicol		13	30.77	1				3														1	1		1	3	2		1					
Cephalosporin																																		
Cephalothin		13	0.00														1	1	1	2	2	3	3											
Cefotaxim(2)		13	0.00																										2		1	1	2	
Fluoroquinolones																																		
Ciprofloxacin(1)		13	0.00																								1		2	1	2		2	
Enrofloxacin		13	7.69	1													1				1					3		2	1	3	1			
Quinolones																																		
Nalidixic acid		13	15.38	2											1				3	1	3	2	1											
Trimethoprim		13	23.08%	2				1						1	1			1	1	1	1	3					1							
Sulfonamides																																		
Sulfonamide		13	92.31	9			1	1	1													1												
Aminoglycosides																																		
Streptomycin		13	61.54	8						1	2			1	1																			
Gentamicin		13	0.00															1	1	1	1	4	2	3										
Neomycin		13	0.00													1	1	2	1	1	1	3		3										
Kanamycin		13	0.00														1			2	1	7	2											
Penicillins																																		
Ampicillin		13	76.92	10										1							1							1						

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = -

37 = 2

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 2
37 = 1
38 = 2
39 = 2

Table 3.2.6 Breakpoints for antibiotic resistance of Salmonella in Animals**Test Method Used**

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
CASFM

Subject to quality control

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content microg	breakpoint Zone diameter (mm)		
		Susceptible ≤	Intermediate	Resistant >	lowest	highest		Susceptible ≥	Intermediate	Resistant ≤
Tetracycline	NCCLS						30	19		14
Amphenicols										
Chloramphenicol	NCCLS						30	18		12
Florfenicol										
Cephalosporin										
Cephalothin	NCCLS						30	18		14
3rd generation cephalosporins	NCCLS						30	23		14
Fluoroquinolones										
Ciprofloxacin	NCCLS						5	21		15
Enrofloxacin	NCCLS						5	23		16
Quinolones										
Nalidixic acid	NCCLS						30	19		13
Trimethoprim										
Sulfonamides										
Sulfonamide	NCCLS						250	17		12
Aminoglycosides										
Streptomycin	NCCLS						10	15		11
Gentamicin	NCCLS						10	15		12
Neomycin	BD BBL						30	17		12
Kanamycin	NCCLS						30	18		13
Trimethoprim + sulfonamides	NCCLS						25	16		10
Penicillins										
Ampicillin	NCCLS						10	17		13

Footnote

Data source: NRC-SALM

Table 3.2.6 Breakpoints for antibiotic resistance of Salmonella in Food**Test Method Used**

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
CASFM

Subject to quality control

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content microg	breakpoint Zone diameter (mm)		
		Susceptible ≤	Intermediate	Resistant >	lowest	highest		Susceptible ≥	Intermediate	Resistant ≤
Tetracycline	NCCLS						30	19		14
Amphenicols										
Chloramphenicol	NCCLS						30	18		12
Florfenicol										
Cephalosporin										
Cephalothin	NCCLS						30	18		14
3rd generation cephalosporins	NCCLS						30	23		14
Fluoroquinolones										
Ciprofloxacin	NCCLS						5	21		15
Enrofloxacin	NCCLS						5	23		16
Quinolones										
Nalidixic acid	NCCLS						30	19		13
Trimethoprim										
Sulfonamides										
Sulfonamide	NCCLS						250	17		12
Aminoglycosides										
Streptomycin	NCCLS						10	15		11
Gentamicin	NCCLS						10	15		12
Neomycin	BD BBL						30	17		12
Kanamycin	NCCLS						30	18		13
Trimethoprim + sulfonamides	NCCLS						25	16		10
Penicillins										
Ampicillin	NCCLS						10	17		13

Table 3.2.6 Breakpoints for antibiotic resistance of Salmonella in Feedingstuff**Test Method Used**

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
CASFM

Subject to quality control

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content microg	breakpoint Zone diameter (mm)		
		Susceptible ≤	Intermediate	Resistant >	lowest	highest		Susceptible ≥	Intermediate	Resistant ≤
Tetracycline	NCCLS						30	19		14
Amphenicols										
Chloramphenicol	NCCLS						30	18		12
Florfenicol										
Cephalosporin										
Cephalothin	NCCLS						30	18		14
3rd generation cephalosporins	NCCLS						30	23		14
Fluoroquinolones										
Ciprofloxacin	NCCLS						5	21		15
Enrofloxacin	NCCLS						5	23		16
Quinolones										
Nalidixic acid	NCCLS						30	19		13
Trimethoprim										
Sulfonamides										
Sulfonamide	NCCLS						250	17		12
Aminoglycosides										
Streptomycin	NCCLS						10	15		11
Gentamicin	NCCLS						10	15		12
Neomycin	BD BBL						30	17		12
Kanamycin	NCCLS						30	18		13
Trimethoprim + sulfonamides	NCCLS						25	16		10
Penicillins										
Ampicillin	NCCLS						10	17		13

2.2. CAMPYLOBACTERIOSIS

2.2.1. General evaluation of the national situation

A. Thermophilic Campylobacter General evaluation

Additional information

The disease is notifiable in humans.

The disease is not notifiable in animals.

2.2.2. Campylobacteriosis in humans

Table 6.3.A Campylobacteriosis in man - species/serotype distribution

Campylobacter	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc	unknown status
	0	0	0	0	0	0	0
C. coli							
C. jejuni							
C. upsaliensis							

Footnote

Data not available

Table 6.3.B Campylobacteriosis in man - age distribution

Age Distribution	C. coli			C. jejuni			Campylobacter spp.		
	All	M	F	All	M	F	All	M	F
<1 year									
1 to 4 years									
5 to 14 years									
15 to 24 years									
25 to 44 years									
45 to 64 years									
65 years and older									
Age unknown									
Total :	0	0	0	0	0	0	0	0	0

Footnote

Data not available

Table 6.3.C Campylobacteriosis in man - seasonal distribution

Month	C. coli		C. jejuni		C. upsaliensis		Campylobacter spp.	
	Cases		Cases		Cases		Cases	
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
not known								
Total :	0		0		0		0	

Footnote

Data not available

2.2.3. *Campylobacter* in foodstuffsTable 6.2 Thermophilic *Campylobacter* spp. in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	<i>C. coli</i>	<i>C. lari</i>	<i>C. upsaliensis</i>	<i>C. jejuni</i>	<i>Campylobacter</i> spp.	<i>Campylobacter cryaerophilus</i>	<i>C. jejuni</i> subsp. <i>jejuni</i>	<i>C. jejuni</i> subsp. <i>doylei</i>
Bovine meat	fresh - at slaughter - at processing plant - at retail - at retail - HACPP or own checks by industry - official food or feed controls		sample	25gr	55	1			1	2			
meat products	- at processing plant - at retail - at processing plant - HACPP or own checks by industry - at retail - HACPP or own checks by industry		sample	25gr	2								
			sample	25gr	48								

[illegible]

[illegible]

[illegible]

Footnote

Where not specified data refer to official controls.

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.2.4. Campylobacter in animals

A. Campylobacter spp. in animal

Control program/mechanisms

The control program/strategies in place

There is not a national control programme in place. In the Veneto Region, in 2004 a monitoring programme for Campylobacter spp. in broiler chickens and turkeys has been carried out. The sampling has been performed at the slaughterhouse, on 212 broilers and 200 turkeys slaughter batches. 10 cloacal swabs were sampled per batch, and analysed in one pool, using the method prescribed by the Community Reference Laboratory of Bilthoven, that requires the use of MSRV as unique selective enrichment.

Additional information

The disease is not notifiable in animals

Table 6.1.1 Thermophilic Campylobacter spp. in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	C. jejuni	C. coli	C. lari	C. upsaliensis	Campylobacter spp.
Cattle (bovine animals)										
dairy cows			animal	40	1		1			
(Unit: herd)			herd	18	0					
breeding animals (bulls)			animal	196	1	1				
unspecified			animal	171	4				1	1
(Unit: herd)			herd	150	42	27	7		1	7
- Control programme			animal	1444	10	2				
Sheep			animal	842	2	2				
- Control programme			animal	103	0					
(Unit: flock)			flock	182	40	20	7			12
Goats			animal	133	2					
- Control programme			animal	1	0					
(Unit: flock)			flock	28	3					
Pigs			animal	19	5					
(Unit: herd)			herd	37	25	5	14			8
- Control programme			animal	24	13					
Solipeds			animal	18	0					
(Unit: herd)			herd	22	2	2				
Gallus gallus										
broilers										
- at farm			animal	38	4	1	3			
- at farm - HACPP or own checks by industry			flock	1	0					
- at slaughter - Control programme			flock	2	1					
- at slaughter - HACPP or own checks by industry			flock	1	0					
- at slaughter - monitoring programme (Veneto Region)			batch	212	193	87	111			1
unspecified			animal	92	63	29	13			21
(Unit: flock)			flock	7	0					
- Control programme			animal	4	1					
Other poultry			sample	3	1					
(Unit: flock)			flock	4	2		1			

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(Unit: animal)		animal	51	6					6
Pet animals									
dogs		animal	239	12	4			2	5
- Control programme		animal	3	1					
cats		animal	79	4	1				3
birds		animal	8	0					
parrot		animal	1	0					
Wildlife		animal	202	1					1
(Unit: herd)		herd	1	1	1				
- Control programme		animal	2	0					
wild birds		animal	381	55					1
Turkeys									
- monitoring programme (Veneto Region)		batch	200	187	93	98			3
Ducks		animal	8	0					
Pigeons		animal	4	0					
(Unit: flock)		flock	4	0					
Ostriches		flock	1	1	1				
Water buffalos		herd	190	1					1
Rabbits		herd	3	0					

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations.

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.2.5. Antimicrobial resistance in *Campylobacter* isolates

Table Antimicrobial susceptibility testing of C. coli - qualitative data

	C. coli							
	Cattle (bovine animals)		Pigs		Sheep		Poultry	
Isolates out of a monitoring program							yes	
Number of isolates available in the laboratory	7		60		7		32	
Antimicrobials:	N	%R	N	%R	N	%R	N	%R
Tetracycline	7	28.60%	60	98.30%	7	42.90%	32	56.25%
Fluoroquinolones								
Ciprofloxacin	7	42.90%	60	68.30%	7	28.60%	32	56.25%
Quinolones								
Nalidixic acid	7	42.90%	60	58.30%	7	28.60%	32	50.00%
Aminoglycosides								
Gentamicin	7	0.00%	60	13.30%	7	0.00%	32	0.00%
Macrolides								
Erythromycin	7	14.30%	60	71.70%	7	0.00%	32	40.62%
Penicillins								
Ampicillin	7	28.60%	60	60.00%	7	14.30%	32	34.37%
Number of multiresistant isolates								
fully sensitives	7	57.14%	60	0.00%	7	42.85%	32	28.12%
resistant to 1 antimicrobial	7	0.00%	60	5.00%	7	14.28%	32	15.62%
resistant to 2 antimicrobials	7	0.00%	60	13.33%	7	28.57%	32	9.37%
resistant to 3 antimicrobials	7	14.28%	60	25.00%	7	0.00%	32	12.50%
resistant to 4 antimicrobials	7	28.57%	60	21.60%	7	14.28%	32	15.62%
resistant to >4 antimicrobials	7	0.00%	60	35.00%	7	0.00%	32	18.75%

Footnote

Data source: NRC-ANTI

Table Antimicrobial susceptibility testing of C. coli in Cattle (bovine animals) - quantitative data [Dilution method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																						
C. coli																						
Cattle (bovine animals)																						
Isolates out of a monitoring program	yes																					
Number of isolates available in the laboratory	7																					
Antimicrobials:	N	%R	≤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
Tetracycline(1)	7				1	2	1	1														
Fluoroquinolones																						
Ciprofloxacin(2)	7				2	2						1										
Quinolones																						
Nalidixic acid(3)	7									3	1											
Aminoglycosides																						
Gentamicin	7						4	3														
Macrolides																						
Erythromycin(4)	7				1			2	2	1												
Penicillins																						
Ampicillin	7										8	2	2									

(1) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 2

(2) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 2

(3) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 3

(4) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 1

Table Antimicrobial susceptibility testing of *C. coli* in Pigs - quantitative data [Dilution method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																						
C. coli																						
Pigs																						
Isolates out of a monitoring program	yes																					
Number of isolates available in the laboratory	60																					
Antimicrobials:	N	%R	≤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
Tetracycline(1)	60										1											
Fluoroquinolones																						
Ciprofloxacin(2)	60			2		15			2		12	20										
Quinolones																						
Nalidixic acid(3)	60								2	6	8	3	6									
Aminoglycosides																						
Gentamicin(4)	60					4	14	25	6	3		3	1									
Macrolides																						
Erythromycin(5)	60					1	1	7	4	3		1										
Penicillins																						
Ampicillin(6)	60							2	1	4	14	3	3									

(1) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 59

(2) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 9

(3) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 35

(4) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 4

(5) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 43

(6) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.
Other values:
>32 = 33

Table Antimicrobial susceptibility testing of *C. coli* in Poultry - quantitative data [Dilution method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																						
C. coli																						
Poultry																						
Isolates out of a monitoring program	yes																					
Number of isolates available in the laboratory	32																					
Antimicrobials:	N	%R	≤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
Tetracycline(1)	32			1		7	4			1	1	1										
Fluoroquinolones																						
Ciprofloxacin(2)	32		4		2	4	1	2	1		2	9										
Quinolones																						
Nalidixic acid(3)	32										3	9	1	3								
Aminoglycosides																						
Gentamicin	32		1			2	15	11	2	1												
Macrolides																						
Erythromycin(4)	32					5	4	9	2	2												
Penicillins																						
Ampicillin(5)	32						2	2	3	4	3	7	1									

(1) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 17

(2) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 7

(3) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 16

(4) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 10

(5) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 10

Table Antimicrobial susceptibility testing of *C. jejuni* - qualitative data

		C. jejuni						
		Cattle (bovine animals)		Pigs		Sheep		Poultry
Isolates out of a monitoring program								yes
Number of isolates available in the laboratory		50		4		23		50
Antimicrobials:	N	%R	N	%R	N	%R	N	%R
Tetracycline	50	40.00%	4	75.00%	23	39.10%	50	80.00%
Fluoroquinolones								
Ciprofloxacin	50	42.00%	4	25.00%	23	60.90%	50	76.00%
Quinolones								
Nalidixic acid	50	26.00%	4	25.00%	23	43.50%	50	58.00%
Aminoglycosides								
Gentamicin	50	2.00%	4	0.00%	23	0.00%	50	2.00%
Macrolides								
Erythromycin	50	6.00%	4	50.00%	23	0.00%	50	18.00%
Penicillins								
Ampicillin	50	14.00%	4	25.00%	23	8.70%	50	44.00%
Number of multiresistant isolates								
fully sensitives	50	44.00%	4	25.00%	23	34.78%	50	12.00%
resistant to 1 antimicrobial	50	18.00%	4	25.00%	23	8.69%	50	8.00%
resistant to 2 antimicrobials	50	12.00%	4	25.00%	23	34.78%	50	12.00%
resistant to 3 antimicrobials	50	18.00%	4	0.00%	23	13.04%	50	32.00%
resistant to 4 antimicrobials	50	6.00%	4	0.00%	23	8.69%	50	30.00%
resistant to >4 antimicrobials	50	2.00%	4	25.00%	23	0.00%	50	6.00%

Footnote

Data source: NRC-ANTI

Table Antimicrobial susceptibility testing of *C. jejuni* in Cattle (bovine animals) - quantitative data [Dilution method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																						
C. jejuni																						
Cattle (bovine animals)																						
Isolates out of a monitoring program	yes																					
Number of isolates available in the laboratory	49																					
Antimicrobials:	N	%R	≤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
Tetracycline(1)	49			2	2	12	7	2	1	2	1	3										
Fluoroquinolones																						
Ciprofloxacin(2)	49		2	3	19	2	1	1	2	2	3	10										
Quinolones																						
Nalidixic acid(3)	49		1					1	11	13	3	7										
Aminoglycosides																						
Gentamicin(4)	49			1	14	28	2	3														
Macrolides																						
Erythromycin(5)	49			6	16	16	2	4	2													
Penicillins																						
Ampicillin(6)	49					1	3	2	12	17	7	1										

(1) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 17

(2) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

0.015 = 1

>16 = 6

(3) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 13

(4) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 1

(5) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 3
(6) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.
Other values:
>32 = 6

Table Antimicrobial susceptibility testing of *C. jejuni* in Pigs - quantitative data [Dilution method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																						
C. jejuni																						
Pigs																						
Isolates out of a monitoring program	yes																					
Number of isolates available in the laboratory	4																					
Antimicrobials:	N	%R	≤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
Tetracycline(1)	4										1	1										
Fluoroquinolones																						
Ciprofloxacin(2)	4					3																
Quinolones																						
Nalidixic acid(3)	4									2			1									
Aminoglycosides																						
Gentamicin	4					1	2	1														
Macrolides																						
Erythromycin(4)	4							2														
Penicillins																						
Ampicillin(5)	4					1					2											

(1) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 2

(2) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 1

(3) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 1

(4) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 2

(5) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 1

Table Antimicrobial susceptibility testing of *C. jejuni* in Poultry - quantitative data [Dilution method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																						
C. jejuni																						
Poultry																						
Isolates out of a monitoring program	yes																					
Number of isolates available in the laboratory	50																					
Antimicrobials:	N	%R	↔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
Tetracycline(1)	49			1	1	1	3	2	2	1		2										
Fluoroquinolones																						
Ciprofloxacin(2)	50		3		2	6	1			1	5	15										
Quinolones																						
Nalidixic acid(3)	50									6	4	5	6									
Aminoglycosides																						
Gentamicin	50		1		4	16	23	4		1			1									
Macrolides																						
Erythromycin(4)	50					4	17	14	5		1											
Penicillins																						
Ampicillin(5)	50						1	2	1	8	10	6	5									

(1) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to:

Other values:

>16 = 38

(2) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to:

Other values:

>16 = 17

(3) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to:

Other values:

>32 = 29

(4) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to:

Other values:

>16 = 9

(5) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to:

Other values:

>32 = 17

Table Antimicrobial susceptibility testing of *C. jejuni* in Sheep - quantitative data [Dilution method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																						
C. jejuni																						
Sheep																						
Isolates out of a monitoring program	yes																					
Number of isolates available in the laboratory	23																					
Antimicrobials:	N	%R	↔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
Tetracycline(1)	23		1	2		3	5	3				4										
Fluoroquinolones																						
Ciprofloxacin(2)	23			4		4					2	7										
Quinolones																						
Nalidixic acid(3)	23								2	5	3	3										
Aminoglycosides																						
Gentamicin	23			1		7	12	3														
Macrolides																						
Erythromycin	23				1	4	7	7	2	1		1										
Penicillins																						
Ampicillin(4)	23						1		3	1	8	8	1									

(1) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 5

(2) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>16 = 5

(3) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 10

(4) : Concentration (µg/ml), percentage of isolates with a concentration of inhibition equal to.

Other values:

>32 = 1

2.3. LISTERIOSIS

2.3.1. General evaluation of the national situation

2.3.2. Listeriosis in humans

A. Listeriosis in humans

Additional information

The disease is notifiable

Table 7.2.A Listeriosis in man - species/serotype distribution

		Cases	Cases Inc
Listeria	Listeria spp.	25	0
	congenital cases	25	
	deaths		

Table 7.2.B Listeriosis in man - age distribution

Age Distribution	L. monocytogenes			Listeria spp.		
	All	M	F	All	M	F
<1 year						
1 to 4 years						
5 to 14 years						
15 to 24 years	1		1			
25 to 44 years	3	2	1			
45 to 64 years	9	7	2			
65 years and older	12	5	7			
Age unknown						
Total :	25	14	11	0	0	0

2.3.3. *Listeria* in foodstuffsTable 7.1 *Listeria monocytogenes* in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Definition used	Units tested	<100 cfu/g	>100 cfu/g	L. monocytogenes
Bovine meat									
meat products									
ready-to-eat									
- at processing plant			sample	25gr	presence in 25 gr	804			26
- at processing plant - environmental sample			sample	25gr	presence in 25gr	107			0
- at retail			sample	25gr	presence in 25gr	374			2
- at processing plant - HACPP or own checks by industry			sample	25gr	presence in 25gr	1031			
- at processing plant - environmental sample - HACPP or own checks by industry			sample	25gr	presence in 25 gr	47			
- at retail - HACPP or own checks by industry			sample	25gr	presence in 25 gr	42			1
Pig meat									
meat products									
ready-to-eat									
- at processing plant			sample	25gr	presence in 25 gr	1551			43
- at processing plant - environmental sample			sample	25gr	presence in 25 gr	213			0
- at retail			sample	25gr	presence in 25 gr	2700			100
- at processing plant - HACPP or own checks by industry			sample	25gr	presence in 25 gr	2006	9		12
- at processing plant - environmental sample - HACPP or own checks by industry			sample	25gr	presence in 25 gr	7			
- at retail - HACPP or own checks by industry			sample	25gr	presence in 25 gr	355			4
Poultry meat									
meat products									
ready to eat									
- at processing plant			sample	25gr	presence in 25 gr	718			8
- at processing plant - environmental sample			sample	25gr	presence in 25 gr	31			0
- at retail			sample	25gr	presence in 25 gr	152	4		5

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- at processing plant - HACPP or own checks by industry		sample	25gr	presence in 25 gr	670			
- at processing plant - environmental sample - HACPP or own checks by industry		sample	25gr	presence in 25 gr	7			
- at retail - HACPP or own checks by industry		sample	25gr	presence in 25 gr	24			
Other meat								
meat products								
ready-to-eat								
- at processing plant		sample	25gr	presence in 25 gr	187			7
- at processing plant - environmental sample		sample	25gr	presence in 25 gr	561			0
- at retail		sample	25gr	presence in 25 gr	718			5
- at processing plant - HACPP or own checks by industry		sample	25gr	presence in 25 gr	522			2
- at processing plant - environmental sample - HACPP or own checks by industry		sample	25gr	presence in 25 gr	688			31
- at retail - HACPP or own checks by industry		sample	25gr	presence in 25 gr	29			
Cheeses								
- at processing plant		sample	25gr	presence in 25 gr	3652	2	3	33
- at retail		sample	25gr	presence in 25 gr	2258			18
- at processing plant - HACPP or own checks by industry		sample	25gr	presence in 25 gr	1256			
- at retail - HACPP or own checks by industry		sample	25gr	presence in 25 gr	344			
Dairy products								
other products								
ready-to-eat								
- at processing plant		sample	25gr	presence in 25 gr	1475			0
- at retail		sample	25gr	presence in 25 gr	929			0
- at processing plant - HACPP or own checks by industry		sample	25gr	presence in 25 gr	749			
- at retail - HACPP or own checks by industry		sample	25gr	presence in 25 gr	120			
ready-to-eat								
- at processing plant - environmental sample		sample	25gr	presence in 25 gr	743			1
- at processing plant - environmental sample - HACPP or own checks by industry		sample	25gr	presence in 25 gr	28			
cow milk								
raw								

for direct human consumption - HACPP or own checks by industry		sample	25gr	presence in 25 gr	288			0
		sample	25gr	presence in 25 gr	300			
Fishery products								
fish								
smoked								
- at processing plant		sample	25gr	presence in 25 gr	13			1
- at processing plant - environmental sample		sample	25gr	presence in 25 gr	4			0
- at retail		sample	25gr	presence in 25 gr	79			9
- at processing plant - HACPP or own checks by industry		sample	25gr	presence in 25 gr	97			
- at processing plant - environmental sample - HACPP or own checks by industry		sample	25gr	presence in 25 gr	0			
- at retail - HACPP or own checks by industry		sample	25gr	presence in 25 gr	36			1
other								
- at processing plant - environmental sample		sample	25gr	presence in 25 gr	116			0
- at retail		sample	25gr	presence in 25 gr	353			39
- at processing plant		sample	25gr	presence in 25 gr	729			7
- at processing plant - environmental sample - HACPP or own checks by industry		sample	25gr	presence in 25 gr	0			
- at retail - HACPP or own checks by industry		sample	25gr	presence in 25 gr	55			1
- at processing plant - HACPP or own checks by industry		sample	25gr	presence in 25 gr	264			
Other ready-to eat products		sample	25gr	presence in 25 gr	976			11
- HACPP or own checks by industry		sample	25gr	presence in 25 gr	1086			15

Footnote

In "Listeria monocytogenes" column the number of positive samples (detection of Listeria in 25 gr) is reported. Where not specified data refer to official controls.

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.4. VEROCYTOTOXIC ESCHERICHIA COLI

2.4.1. General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

Additional information

The disease is notifiable in humans.

The disease is not notifiable in animals.

2.4.2. Verocytotoxic Escherichia coli in humans

Table 11.3.A Verocytotoxic Escherichia coli infections in man - species/serotype distribution

Pathogenic Escherichia coli	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc
HUS						
- clinical cases	27					
- lab. confirmed cases	17					
- caused by O157 (VT+)	4					
- caused by other VTEC	13					
E.coli infect. (except HUS)						
- laboratory confirmed	3					
- caused by O157 (VT+)	3					
- caused by other VTEC	0					

Footnote

Data source: Istituto Superiore di Sanità, Rome

Table 11.3.B Verocytotoxic Escherichia coli infections in man - age distribution

Age Distribution	Verotoxigenic E. coli (VTEC)			VTEC O 157:H7			VTEC non-O 157		
	All	M	F	All	M	F	All	M	F
<1 year	4	4							
1 to 4 years	16	13	3						
5 to 14 years	3	2	1						
15 to 24 years									
25 to 44 years									
45 to 64 years				2	1	1			
65 years and older									
Age unknown	4	1	3	1	1	1			
Total :	27	20	7	3	2	1	0	0	0

Footnote

Data source: Istituto Superiore di Sanità, Rome

2.4.3. Pathogenic *Escherichia coli* in foodstuffs

Table 11.2 Verocytotoxic *Escherichia coli* in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	VTEC O 157	VTEC O 157:H7
Bovine meat								
fresh			sample	25gr	43			
- at slaughter			sample	25gr	80			
- at processing plant			sample	25gr	57			
- at retail			sample	25gr	467			
- at processing plant - HACPP or own checks by industry			sample	25gr	64	13	3	
- at retail - HACPP or own checks by industry			sample	25gr	43			
- HACPP or own checks by industry			sample	25gr	4	1	1	
meat products			sample	25gr	450			
- at processing plant			sample	25gr	15			
- at retail			sample	25gr	93			
- at processing plant - HACPP or own checks by industry			sample	25gr	70			
- at retail - HACPP or own checks by industry			sample	25gr	10			
- HACPP or own checks by industry			sample	25gr	20			
Pig meat								
fresh			sample	25gr	89			
- at slaughter			sample	25gr	15			
- at processing plant			sample	25gr	18			
- at retail			sample	25gr	121	1	1	
- at processing plant - HACPP or own checks by industry			sample	25gr	198	7		
- at retail - HACPP or own checks by industry			sample	25gr	29			
- HACPP or own checks by industry			sample	25gr	4	1	1	
meat products			sample	25gr	523			

- at processing plant		sample	25gr	91			
- at retail		sample	25gr	232			
- at processing plant - HACPP or own checks by industry		sample	25gr	1218	1		
- at retail - HACPP or own checks by industry		sample	25gr	37			
Poultry meat							
fresh		sample	25gr	20			
- at processing plant		sample	25gr	11			
- at retail		sample	25gr	76			
- at processing plant - HACPP or own checks by industry		sample	25gr	47	4		
- at retail - HACPP or own checks by industry		sample	25gr	4			
- HACPP or own checks by industry		sample	25gr	3			
meat products		sample	25gr	84			
- at processing plant		sample	25gr	2			
- at retail		sample	25gr	7			
- at processing plant - HACPP or own checks by industry		sample	25gr	9			
- at retail - HACPP or own checks by industry		sample	25gr	4			
- HACPP or own checks by industry		sample	25gr	1			
Meat from sheep							
fresh		sample	25gr	12	1	1	
- at slaughter		sample	25gr	2			
- at processing plant		sample	25gr	4			
- at retail		sample	25gr	9			
- HACPP or own checks by industry		sample	25gr	1			
Other processed food products							
prepared dishes		sample	25gr	229			
- HACPP or own checks by industry		sample	25gr	34			
cow milk							
raw		sample	25gr	54			
- HACPP or own checks by industry		sample	25gr	12			
heat-treated		sample	25gr	2			
- HACPP or own checks by industry		sample	25gr	42			
Dairy products		sample	25gr	1765	9	4	

Italy 2004 Report on trends and sources of zoonoses

- HACPP or own checks by industry			sample	25gr	1998			
Fishery products			sample	25gr	423	13		
- HACPP or own checks by industry			sample	25gr	660			
Other food			sample	25gr	286			
- HACPP or own checks by industry			sample	25gr	2047			

Footnote

Where not specified data refer to official controls.

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.4.4. Pathogenic Escherichia coli in animals

A. Verotoxigenic Escherichia coli in cattle (bovine animals)

Control program/mechanisms

The control program/strategies in place

The disease in animals is not notifiable and no control programs are in place at national level.

Table 11.1 Verocytotoxic Escherchia coli in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	VTEC O 157	VTEC O 157:H7	VTEC non-O 157
Cattle (bovine animals)								
calves (under 1 year)			animal	308				3
unspecified			animal	14	0			
(Unit: herd)			herd	5	0			
(Research activity)			animal	167	0			
- survey			sample	154	0			
Sheep			animal	12	0			
(Unit: flock)			flock	2	0			
Goats			animal	11	0			
- Control programme			animal	32	3	3		
(Unit: flock)			flock	1	0			
Pigs			animal	4	0			
- survey			sample	97	0			
Solipeds			herd	1	0			
- survey			sample	22	0			
Poultry								
- monitoring programme			flock	13	0			
(Unit: flock)								
- monitoring programme			sample	58	0			
(Unit: sample)								
Pet animals								
dogs			animal	9	0			
Sheep and goats								
- survey			sample	585	0			
Turkeys								
- monitoring programme			flock	115	0			
Rabbits			animal	14	0			
Water buffalos			herd	1	0			
- HACPP or own checks by industry			herd	29	3	3		
Other animals								
- monitoring programme			sample	88	0			
Wildlife								
deer			animal	168	0			

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations.

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.5. TUBERCULOSIS

2.5.1. General evaluation of the national situation

A. Tuberculosis General evaluation

Additional information

The disease is notifiable in humans

2.5.2. Tuberculosis in humans

Table 1.2.A Tuberculosis in man - species/serotype distribution

Mycobacterium	Cases	Cases Inc	Autochthone cases	Autochthone Inc	Imported cases	Imported Inc
	2966	0	0	0	0	0
M. bovis	5					
M. tuberculosis	1638					
Mycobacterium spp.	1323					
reactivation of previous cases						

Table 1.2.B Tuberculosis in man - age distribution

Age Distribution	M. bovis		
	All	M	F
<1 year			
1 to 4 years			
5 to 14 years			
15 to 24 years			
25 to 44 years	3	3	
45 to 64 years	1		1
65 years and older	1	1	
Age unknown			
Total :	5	4	1

2.5.3. Mycobacterium in animals

A. Mycobacterium bovis in Bovine Animals

Status as officially free of bovine tuberculosis during the reporting year

Free regions

Those recognized by the European Commission according to community legislation (i.e. Dir. 97/12/EC)

Monitoring system

Sampling strategy

None

Vaccination policy

None

Control program/mechanisms

The control program/strategies in place

All cattle over 6 weeks of age is tested once a year in all the herds officially free; 2 negative testing at a distance of 6 months in order to gain the qualification.

Official post mortem examination is performed in all slaughtered bovine animals with obligatory report to the ASL responsible for the area of provenience of the slaughtered animal, which will take care of an epidemiological investigation at a local level.

Measures in case of the positive findings or single cases

All the positives have to be slaughtered within 30 days, with 2 negative testing at a distance of 42 days one from the other in order to repopulate. No animal movement from and to the holding is allowed until all the animals has resulted negative to the 2 testing above mentioned, with the only exception of the animals going to a slaughter house.

Notification system in place

Each IZS (Istituto Zooprofilattico Sperimentale) is collecting the epidemiological investigation reported by the ASL in case of any positivity in a holding. The format of the investigation is standard and is the same for the whole country.

Results of the investigation

Some of the results of the investigations mentioned above are summarized in Annex VI of Decision 2002/677/EC.

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

In the last five years the percentage of holdings controlled has ranged each year between 78 %

and 89 % of those subjected to the programme of eradication, with a prevalence from 0,87% to 1,1 % and the number of holdings officially free (according to the national and community legislation) between 89 and 95 % of those subjected to the programme. The situation appears to be therefore stable with most of the central and northern regions almost ready for the community qualification as officially free, while the southern regions with some problems in the implementation of the programme at a regional level.

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

Some of the infection in human beings appear to be related to the contact with infected cattle (e.g. people working inside dairy farms).

B. Mycobacterium bovis in farmed deer

Monitoring system

Sampling strategy

None

Vaccination policy

None

Control program/mechanisms

The control program/strategies in place

None

Table 1.1.3 Tuberculosis in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	M. bovis	M. tuberculosis
Goats			animal	1	0		
(Unit: flock)			flock	1	0		
Pigs			animal	5	0		
(Unit: herd)			herd	1	0		
Sheep			animal	8	0		
Other animals			animal	27	2		
Wildlife			animal	100	2	1	
wild boars			animal	29	11		
- survey			animal	270	12		12
(Regional plan)			animal	8	0		
Pet animals			animal	1	0		
Turkeys			animal	1	0		
Poultry							
- Control programme			flock	5	1		
Pigeons			animal	1	1		

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations.

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

1.1.1 Bovine tuberculosis

MANDATORY	CATTLE		
Number of herds under official control:	187098	Number of animals under official control:	6456993
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	116344	129	674
New cases notified during the year (b):			621
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	100508		1110
Routine tuberculin test (c) - data concerning animals:	3488628		7682
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	9069	7617	1452
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

1.1.1 Bovine tuberculosis - Lombardia

MANDATORY	CATTLE		
Number of herds under official control:	24149	Number of animals under official control:	1622485
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	8751	0	13
New cases notified during the year (b):			13
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	6082		13
Routine tuberculin test (c) - data concerning animals:	705616		580
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	1321	580	741
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Provincia Autonoma Bolzano/Bozen

MANDATORY	CATTLE		
Number of herds under official control:	9063	Number of animals under official control:	126716
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	9063	0	0
New cases notified during the year (b):			0
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	9063		0
Routine tuberculin test (c) - data concerning animals:	126716		0
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Veneto

MANDATORY	CATTLE		
Number of herds under official control:	27367	Number of animals under official control:	1190384
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	10589	0	6
New cases notified during the year (b):			6
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	7945		6
Routine tuberculin test (c) - data concerning animals:	249309		23
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	23	23	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Emilia-Romagna

MANDATORY	CATTLE		
Number of herds under official control:	11388	Number of animals under official control:	626947
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	9302	0	5
New cases notified during the year (b):			5
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	5122		5
Routine tuberculin test (c) - data concerning animals:	316205		31
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	87	35	52
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Umbria

MANDATORY	CATTLE		
Number of herds under official control:	4681	Number of animals under official control:	70494
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	2349	0	2
New cases notified during the year (b):			2
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	6		2
Routine tuberculin test (c) - data concerning animals:	1115		2
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	2	2	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Lazio

MANDATORY	CATTLE		
Number of herds under official control:	14154	Number of animals under official control:	273906
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	9082	1	47
New cases notified during the year (b):			27
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	9170		47
Routine tuberculin test (c) - data concerning animals:	247340		521
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	543	537	6
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Molise

MANDATORY	CATTLE		
Number of herds under official control:	3761	Number of animals under official control:	51826
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	3334	3	4
New cases notified during the year (b):			2
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	3346		4
Routine tuberculin test (c) - data concerning animals:	47499		49
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	49	49	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Puglia

MANDATORY	CATTLE		
Number of herds under official control:	5288	Number of animals under official control:	188421
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	5022	0	53
New cases notified during the year (b):			31
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	5075		53
Routine tuberculin test (c) - data concerning animals:	184505		510
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	808	487	321
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Liguria

MANDATORY	CATTLE		
Number of herds under official control:	2003	Number of animals under official control:	17901
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	944	2	5
New cases notified during the year (b):			4
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	1308		5
Routine tuberculin test (c) - data concerning animals:	16144		55
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	136	54	82
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Valle d'Aosta/Vallée d'Aoste

MANDATORY	CATTLE		
Number of herds under official control:	1537	Number of animals under official control:	57568
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	1332	9	32
New cases notified during the year (b):			4
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	1339		32
Routine tuberculin test (c) - data concerning animals:	33084		39
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	39	39	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Piemonte

MANDATORY	CATTLE		
Number of herds under official control:	19154	Number of animals under official control:	847555
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	14382	16	71
New cases notified during the year (b):			54
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	14432		71
Routine tuberculin test (c) - data concerning animals:	606961		1605
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	1808	1674	134
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Sardegna

MANDATORY	CATTLE		
Number of herds under official control:	10238	Number of animals under official control:	304563
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	10238	0	2
New cases notified during the year (b):			2
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	955		2
Routine tuberculin test (c) - data concerning animals:	66330		0
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Sicilia

MANDATORY	CATTLE		
Number of herds under official control:	12268	Number of animals under official control:	412852
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	9817	16	723
New cases notified during the year (b):			368
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	11724		723
Routine tuberculin test (c) - data concerning animals:	396384		3342
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	3196	3196	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Calabria

MANDATORY	CATTLE		
Number of herds under official control:	11539	Number of animals under official control:	163831
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	5035	4	37
New cases notified during the year (b):			25
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	5901		37
Routine tuberculin test (c) - data concerning animals:	111562		172
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	166	166	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Basilicata

MANDATORY	CATTLE		
Number of herds under official control:	3527	Number of animals under official control:	88603
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	3417	5	22
New cases notified during the year (b):			14
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	3441		22
Routine tuberculin test (c) - data concerning animals:	85761		116
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	147	147	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Campania

MANDATORY	CATTLE		
Number of herds under official control:	15658	Number of animals under official control:	220054
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	11017	9	83
New cases notified during the year (b):			61
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	12769		83
Routine tuberculin test (c) - data concerning animals:	200937		607
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	714	598	116
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Abruzzo

MANDATORY	CATTLE		
Number of herds under official control:	6093	Number of animals under official control:	81517
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	4651	63	1
New cases notified during the year (b):			0
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	4808		1
Routine tuberculin test (c) - data concerning animals:	33685		16
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	16	16	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Marche

MANDATORY	CATTLE		
Number of herds under official control:	5366	Number of animals under official control:	61102
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	2410	0	0
New cases notified during the year (b):			0
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	2410		0
Routine tuberculin test (c) - data concerning animals:	54781		0
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Toscana

MANDATORY	CATTLE		
Number of herds under official control:	5304	Number of animals under official control:	74342
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	2173	1	2
New cases notified during the year (b):			1
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	2174		2
Routine tuberculin test (c) - data concerning animals:	52538		12
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	12	12	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Friuli-Venezia Giulia

MANDATORY	CATTLE		
Number of herds under official control:	3623	Number of animals under official control:	102642
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	2499	0	2
New cases notified during the year (b):			2
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	2501		2
Routine tuberculin test (c) - data concerning animals:	78872		2
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	2	2	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

1.1.1 Bovine tuberculosis - Provincia Autonoma Trento

MANDATORY	CATTLE		
Number of herds under official control:	1611	Number of animals under official control:	39465
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	1611	0	0
New cases notified during the year (b):			0
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	1611		0
Routine tuberculin test (c) - data concerning animals:	39465		0
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):			
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):			
Follow-up investigation of suspected cases: trace, contacts (f):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):			
Other routine investigations: tests at AI stations (h):			
	All animals	Positives	Contacts
Animals destroyed (i):			
Animals slaughtered (j):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

2.6. BRUCELLOSIS

2.6.1. General evaluation of the national situation

A. Brucellosis General evaluation

Additional information

The disease is notifiable in humans.

2.6.2. Brucellosis in humans

Table 2.3.A Brucellosis in man - species/serotype distribution

Brucella	Cases	Cases Inc	Autochthone cases	Autochthone Inc	Imported cases	Imported Inc
B. abortus	398	0	0	0	0	0
B. melitensis						
B. suis						
Brucella spp. occupational cases	398					

Table 2.3.B Brucellosis in man - age distribution

Age Distribution	B. abortus			B. melitensis			Brucella spp.		
	All	M	F	All	M	F	All	M	F
<1 year	2	1	1						
1 to 4 years	9	4	5						
5 to 14 years	20	12	8						
15 to 24 years	58	42	16						
25 to 44 years	136	97	39						
45 to 64 years	119	72	47						
65 years and older	54	34	20						
Age unknown									
Total :	398	262	136	0	0	0	0	0	0

2.6.3. Brucella in foodstuffs

Table 2.2 Brucella sp. in food

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	B. melitensis	B. abortus	B. suis
cow milk								
raw								
- official food or feed controls			sample	444	7	6	1	
- HACPP or own checks by industry			sample	142	0			
milk for manufacture								
- official food or feed controls			sample	115	0			
- HACPP or own checks by industry			sample	52	0			
heat-treated								
- official food or feed controls			sample	15	0			
- HACPP or own checks by industry			sample	20	0			
Dairy products								
- official food or feed controls			sample	342	0			
- HACPP or own checks by industry			sample	67	0			

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.6.4. Brucella in animals

A. Brucella abortus in Bovine Animals

Status as officially free of bovine brucellosis during the reporting year

Free regions

Those recognized by the European Commission according to community legislation (i.e. Dir. 97/12/EC).

Monitoring system

Sampling strategy

None

Vaccination policy

Vaccination policy is in place in the area of Monti Nebrodi (Messina - Sicily), with RB 51. A special plan for the eradication of bovine brucellosis has been approved just in the area above mentioned and for buffaloes only in the area of Caserta (Campania) with RB 51 and Buck 19.

Control program/mechanisms

The control program/strategies in place

All cattle over 12 months of age is tested twice a year in all the herds officially free with CFT (complement fixation test) to be executed in case of positive RBT (rose bengal test). Notification of cases of abortion is mandatory with isolation of Br. species to be performed.

Measures in case of the positive findings or single cases

All the positive cattle has to be slaughtered within 30 days, with 2 negative testing at a distance of 42 days one from the other in order to repopulate and 2 negative testing at a distance of 6 months (4-8 months) in order to re-gain the qualification of holding officially free (according to national and community legislation). No animal movement from and to the holding is allowed until all the animals has resulted negative to the 2 testing above mentioned, with the only exception of the animals going to a slaughter house.

Notification system in place

Each IZS (Istituto Zooprofilattico Sperimentale) is collecting the epidemiological investigation reported by the ASL in case of any positivity in a holding. The format of the investigation is standard and is the same for the whole country.

Results of the investigation

Some of the results of the investigations mentioned above are summarized in Annex VI of Decision 2002/677/EC.

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

In the last five years the percentage of holdings controlled has ranged each year between 88 % and 93 % of those subjected to the programme of eradication, with a prevalence from 1,3 % to 1,8 % and the number of holdings officially free (according to the national and community legislation) between 80,6 and 91,5 % of those subjected to the programme. The situation appears to be therefore stable with most of the central and northern regions almost ready for the community qualification as officially free, while the southern regions with some problems in the implementation of the programme at a regional level. The most problematic region appear to be Sicily, with 60 % of the infected farms over all the infected farms in the country.

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

Some of the infections in human beings appear to be caused by consumption of cheese not well seasoned and contact with placenta of infected animals (e.g. veterinarians).

B. *Brucella melitensis* in Sheep

Status as officially free of ovine brucellosis during the reporting year

Free regions

Those recognized by the European Commission according to community legislation (i.e. Dir. 91/68/EEC).

Monitoring system

Sampling strategy

Confidence 99 % and prevalence 0,2 %, in Sardegna only as officially free according to community legislation

Frequency of the sampling

Once a year

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Each year a number of holdings is selected randomly from all those present in Sardegna in order to guarantee with a confidence of 99% that the prevalence of the disease is below 0,2% or, in other words, the number of officially free holdings is at least 99,8%. Inside each selected holding a sample of animals is tested, between all those with at least 6 months of age, so that the prevalence of the disease is below 2% with a confidence of 99%.

Case definition

All those from which Br. Melitensis has been isolated, according to Dir. 91/68/EEC

Diagnostic/analytical methods used

RBT and CFT; in case of positivity to RBT and CFT isolation of Br. melitensis.

Vaccination policy

With REV1 in Sicily, according to a special plan specifically approved.

Control program/mechanisms

The control program/strategies in place

All sheep and goats over 6 months are tested twice a year in all the herds officially free.

Measures in case of the positive findings or single cases

All the positive sheep and goats have to be slaughtered within 30 days, with 1 negative testing at a distance of 42 days in order to repopulate and another negative testing at a distance of 6 months in order to re-gain the qualification.

Notification system in place

Each IZS (Istituto Zooprofilattico Sperimentale) is collecting the epidemiological investigation reported by the ASL in case of any positivity in a holding. The format of the investigation is standard and is the same for the whole country.

Results of the investigation

Some of the results of the investigations mentioned above are summarized in Annex VI of Decision 2002/677/EC.

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

Some of the infections in human beings appear to be caused by consumption of cheese not seasoned for long and contact with placenta of infected animals (e.g. veterinarians).

C. Brucella melitensis in Goat

Status as officially free of caprine brucellosis during the reporting year

Additional information

For the information concerning Goats, please refer to brucellosis in sheep, as the program of control is the same for sheep and goats.

Table 2.1.3 Brucellosis in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	B. melitensis	B. abortus	B. suis
Pet animals								
- survey			animal	147	0			
- Control programme			animal	93	26			
Wildlife								
- survey			sample	94	5		1	1
(Research activity)			sample	1177	57	4		53
hares								
- survey			animal	75	0			
deer								
roe								
- survey			animal	2	0			
- Control programme			animal	9	0			
Rabbits								
- survey			sample	75	0			
Camel								
- survey			animal	1	0			
Other animals								
- survey			animal	1	0			
Solipeds								
- Control programme			animal	44	0			

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.1.1 Bovine brucellosis

MANDATORY	CATTLE		
Number of herds under official control:	163089	Number of animals under official control:	5440746
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	83643	126	1630
New cases notified during the year (b):			1004
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):		444	2
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	91392		1630
Routine testing (d2) - number of animals tested:	2044406		8637
Routine testing (d3) - number of animals tested individually:	1832316		
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	9197	8266	931
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Abruzzo

MANDATORY	CATTLE		
Number of herds under official control:	6093	Number of animals under official control:	75582
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	4065	50	14
New cases notified during the year (b):			13
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	4434		14
Routine testing (d2) - number of animals tested:	48480		
Routine testing (d3) - number of animals tested individually:	18995		132
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	140	130	10
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Basilicata

MANDATORY	CATTLE		
Number of herds under official control:	3527	Number of animals under official control:	88603
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	3128	0	51
New cases notified during the year (b):			22
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	3456		51
Routine testing (d2) - number of animals tested:	68556		
Routine testing (d3) - number of animals tested individually:	68556		338
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	408	337	71
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Calabria

MANDATORY	CATTLE		
Number of herds under official control:	11539	Number of animals under official control:	159387
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	3348	59	319
New cases notified during the year (b):			194
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	5082		319
Routine testing (d2) - number of animals tested:	94363		
Routine testing (d3) - number of animals tested individually:	94363		1460
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	1341	1341	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Emilia-Romagna

MANDATORY	CATTLE		
Number of herds under official control:	9225	Number of animals under official control:	446149
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	9225	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	9206		11
Routine testing (d2) - number of animals tested:	445967		
Routine testing (d3) - number of animals tested individually:	78756		155
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	125	122	3
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Lazio

MANDATORY	CATTLE		
Number of herds under official control:	14154	Number of animals under official control:	273906
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	8958	1	37
New cases notified during the year (b):			11
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	8998		37
Routine testing (d2) - number of animals tested:	195525		
Routine testing (d3) - number of animals tested individually:	212354		218
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	345	217	128
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Lombardia

MANDATORY	CATTLE		
Number of herds under official control:	24149	Number of animals under official control:	1622485
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	559	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	497		0
Routine testing (d2) - number of animals tested:	63183		
Routine testing (d3) - number of animals tested individually:	35406		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Molise

MANDATORY	CATTLE		
Number of herds under official control:	3761	Number of animals under official control:	51826
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	3307	1	2
New cases notified during the year (b):			2
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	3311		2
Routine testing (d2) - number of animals tested:	31128		
Routine testing (d3) - number of animals tested individually:	31128		3
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	3	3	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Puglia

MANDATORY	CATTLE		
Number of herds under official control:	5288	Number of animals under official control:	188421
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	4892	0	133
New cases notified during the year (b):			67
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	5049		133
Routine testing (d2) - number of animals tested:	144133		
Routine testing (d3) - number of animals tested individually:	158189		759
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	1267	754	513
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Veneto

MANDATORY	CATTLE		
Number of herds under official control:	27367	Number of animals under official control:	1190384
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	10589	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	10589		0
Routine testing (d2) - number of animals tested:	297004		
Routine testing (d3) - number of animals tested individually:	114214		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Valle d'Aosta/Vallée d'Aoste

MANDATORY	CATTLE		
Number of herds under official control:	1537	Number of animals under official control:	57568
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	1314	5	14
New cases notified during the year (b):			12
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	1377		14
Routine testing (d2) - number of animals tested:	32821		
Routine testing (d3) - number of animals tested individually:	32860		37
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	41	37	4
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Umbria

MANDATORY	CATTLE		
Number of herds under official control:	4681	Number of animals under official control:	70494
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	2349	1	3
New cases notified during the year (b):			3
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	2350		3
Routine testing (d2) - number of animals tested:	38477		
Routine testing (d3) - number of animals tested individually:	38477		3
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	3	3	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Provincia Autonoma Trento

MANDATORY	CATTLE		
Number of herds under official control:	1577	Number of animals under official control:	36251
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	1577	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	1577		0
Routine testing (d2) - number of animals tested:	36251		
Routine testing (d3) - number of animals tested individually:	36251		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Toscana

MANDATORY	CATTLE		
Number of herds under official control:	2921	Number of animals under official control:	35735
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	1319	1	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	1319		0
Routine testing (d2) - number of animals tested:	19851		
Routine testing (d3) - number of animals tested individually:	21504		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Sicilia

MANDATORY	CATTLE		
Number of herds under official control:	12268	Number of animals under official control:	377101
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	9371	0	840
New cases notified during the year (b):			532
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	11719		840
Routine testing (d2) - number of animals tested:	299833		
Routine testing (d3) - number of animals tested individually:	299833		4407
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	4136	4136	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Sardegna

MANDATORY	CATTLE		
Number of herds under official control:	9051	Number of animals under official control:	195708
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	9051	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	8345		0
Routine testing (d2) - number of animals tested:	189119		
Routine testing (d3) - number of animals tested individually:	193760		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Piemonte

MANDATORY	CATTLE		
Number of herds under official control:	19154	Number of animals under official control:	847555
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	14349	8	1
New cases notified during the year (b):			1
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	14356		1
Routine testing (d2) - number of animals tested:	438829		
Routine testing (d3) - number of animals tested individually:	430372		55
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	31	31	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Marche

MANDATORY	CATTLE		
Number of herds under official control:	5366	Number of animals under official control:	61102
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	2385	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	2385		0
Routine testing (d2) - number of animals tested:	35192		
Routine testing (d3) - number of animals tested individually:	36899		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Liguria

MANDATORY	CATTLE		
Number of herds under official control:	2003	Number of animals under official control:	17901
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	1403	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	1290		0
Routine testing (d2) - number of animals tested:	12694		
Routine testing (d3) - number of animals tested individually:	13434		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Friuli-Venezia Giulia

MANDATORY	CATTLE		
Number of herds under official control:	3623	Number of animals under official control:	102642
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	2453	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	2453		0
Routine testing (d2) - number of animals tested:	70735		
Routine testing (d3) - number of animals tested individually:	71830		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Campania

MANDATORY	CATTLE		
Number of herds under official control:	15658	Number of animals under official control:	220054
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	9854	0	216
New cases notified during the year (b):			147
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	12727		216
Routine testing (d2) - number of animals tested:	153602		
Routine testing (d3) - number of animals tested individually:	153602		1225
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	1482	1277	205
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.1 Bovine brucellosis - Provincia Autonoma Bolzano/Bozen

MANDATORY	CATTLE		
Number of herds under official control:	9063	Number of animals under official control:	142244
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	9063	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	9063		0
Routine testing (d2) - number of animals tested:	14244		
Routine testing (d3) - number of animals tested individually:	29224		0
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
Other routine investigations: tests at AI stations (g):			
	All animals	Positives	Contacts
Animals destroyed (h):			
Animals slaughtered (i):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):			

2.1.2 Ovine and caprine brucellosis

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	82998	Number of animals under official control:	4600289
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	64798	293	2411
New cases notified during the year (b):			1030
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):		170	2
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	69955		2411
Routine testing (d) - data concerning animals:	3774433		102354
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	98816	94193	4623
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Abruzzo

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	7526	Number of animals under official control:	264888
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	5368	285	9
New cases notified during the year (b):			7
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	5680		9
Routine testing (d) - data concerning animals:	139250		494
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	494	494	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Basilicata

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	6254	Number of animals under official control:	397134
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	5916	0	53
New cases notified during the year (b):			31
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	5908		53
Routine testing (d) - data concerning animals:	272895		612
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	930	566	364
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Provincia Autonoma Bolzano/Bozen

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	3701	Number of animals under official control:	38019
	OBF ovine and caprine holdings	OBF ovine and caprine holdings with status suspended	OBF ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	3701	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	3701		0
Routine testing (d) - data concerning animals:	32438		0
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Calabria

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	11994	Number of animals under official control:	510043
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	5100	0	568
New cases notified during the year (b):			240
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	6530		568
Routine testing (d) - data concerning animals:	414739		13066
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	12951	12522	429
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Campania

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	8582	Number of animals under official control:	301610
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	6651	0	183
New cases notified during the year (b):			123
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	7682		183
Routine testing (d) - data concerning animals:	240199		5916
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	6513	5579	934
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Emilia-Romagna

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	2833	Number of animals under official control:	85984
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	2739	1	3
New cases notified during the year (b):			3
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	2622		3
Routine testing (d) - data concerning animals:	76541		13
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	39	13	26
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Friuli-Venezia Giulia

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	461	Number of animals under official control:	12557
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	457	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	457		0
Routine testing (d) - data concerning animals:	6718		0
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Lazio

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	4557	Number of animals under official control:	400299
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	3514	0	29
New cases notified during the year (b):			11
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	3538		29
Routine testing (d) - data concerning animals:	208477		1622
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	2040	1618	422
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Liguria

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	2444	Number of animals under official control:	24931
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	1961	0	2
New cases notified during the year (b):			2
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	1868		2
Routine testing (d) - data concerning animals:	19358		2
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Lombardia

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	8629	Number of animals under official control:	156930
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	8629	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	8629		0
Routine testing (d) - data concerning animals:	156930		0
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Marche

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	3610	Number of animals under official control:	155239
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	3333	1	1
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	3347		1
Routine testing (d) - data concerning animals:	156765		3
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	3	3	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Molise

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	3276	Number of animals under official control:	100571
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	3273	1	3
New cases notified during the year (b):			2
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	3141		3
Routine testing (d) - data concerning animals:	97122		5
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	5	5	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Piemonte

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	7483	Number of animals under official control:	165027
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	7410	2	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	7412		0
Routine testing (d) - data concerning animals:	133401		7
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	5	5	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Puglia

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	4146	Number of animals under official control:	406738
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	3765	0	174
New cases notified during the year (b):			88
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	3953		174
Routine testing (d) - data concerning animals:	306882		6089
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	7818	5641	2177
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Sardegna

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	16759	Number of animals under official control:	3242673
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	16755	4	0
New cases notified during the year (b):			
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	2166		18
Routine testing (d) - data concerning animals:	375744		18
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	18	18	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Sicilia

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	8954	Number of animals under official control:	1054042
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	6439	0	1384
New cases notified during the year (b):			522
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	8860		1384
Routine testing (d) - data concerning animals:	1012578		74524
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	68017	67746	271
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Toscana

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	5653	Number of animals under official control:	514634
	OBF ovine and caprine holdings	OBF ovine and caprine holdings with status suspended	OBF ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	4199	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	4201		0
Routine testing (d) - data concerning animals:	136066		0
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Provincia Autonoma Trento

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	1021	Number of animals under official control:	32706
	OBF ovine and caprine holdings	OBF ovine and caprine holdings with status suspended	OBF ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	1021	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	1021		0
Routine testing (d) - data concerning animals:	32706		0
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Umbria

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	2763	Number of animals under official control:	141863
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	2762	0	1
New cases notified during the year (b):			1
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	2763		1
Routine testing (d) - data concerning animals:	74735		1
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	1	1	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Valle d'Aosta/Vallée d'Aoste

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	870	Number of animals under official control:	9635
	OBV ovine and caprine holdings	OBV ovine and caprine holdings with status suspended	OBV ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	527	0	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	519		0
Routine testing (d) - data concerning animals:	6554		0
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.1.2 Ovine and caprine brucellosis - Veneto

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	1592	Number of animals under official control:	55094
	OBF ovine and caprine holdings	OBF ovine and caprine holdings with status suspended	OBF ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	1384	3	0
New cases notified during the year (b):			0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	1474		0
Routine testing (d) - data concerning animals:	44942		0
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):			
	All animals	Positives	Contacts
Animals destroyed (g):			
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):			

2.7. YERSINIOSIS

2.7.1. General evaluation of the national situation

A. *Yersinia enterocolitica* general evaluation

Additional information

The disease is not notifiable in animals

The disease is notifiable in humans

2.7.2. Yersiniosis in humans

Table 8.3.A Yersiniosis in man - species/serotype distribution

Yersinia	Cases	Cases Inc	Autochthone cases	Autochthone Inc	Imported cases	Imported Inc
	0	0	0	0	0	0
Y. enterocolitica						
Y. enterocolitica O:3						
Y. enterocolitica O:9						

Footnote

Data not available

Table 8.3.B Yersiniosis in man - age distribution

Age Distribution	Y. enterocolitica			Yersinia spp.		
	All	M	F	All	M	F
<1 year						
1 to 4 years						
5 to 14 years						
15 to 24 years						
25 to 44 years						
45 to 64 years						
65 years and older						
Age unknown						
Total :	0	0	0	0	0	0

Footnote

Data not available

Table 8.3.C Yersiniosis in man - seasonal distribution

Month	Y. enterocolitica		Yersinia spp.	
	Cases		Cases	
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
not known				
Total :		0		0

Footnote

Data not available

2.7.3. *Yersinia* in foodstuffsTable 8.2 *Yersinia enterocolitica* in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	<i>Y. enterocolitica</i>	<i>Y. enterocolitica</i> O:3	<i>Y. enterocolitica</i> O:9
Bovine meat									
fresh									
- at slaughter			sample	25gr	50	1			
- at processing plant			sample	25gr	11	0			
- at retail			sample	25gr	57	4			
- at retail - HACPP or own checks by industry			sample	25gr	2	0			
meat products									
- at processing plant			sample	25gr	11	0			
- at retail			sample	25gr	1	0			
- at processing plant - HACPP or own checks by industry			sample	25gr	9	0			
			sample	25gr	2	0			
Pig meat									
fresh									
- at slaughter			sample	25gr	85	3			
- at processing plant			sample	25gr	17	0			
- at retail			sample	25gr	62	1			
- at slaughter - HACPP or own checks by industry			sample	25gr	3	0			
- at processing plant - HACPP or own checks by industry			sample	25gr	2	0			
meat products									
- at slaughter			sample	25gr	8	1			
- at processing plant			sample	25gr	7	0			
- at retail			sample	25gr	33	1			
- at processing plant - HACPP or own checks by industry			sample	25gr	148	13			
			sample	25gr	5	0			
Poultry meat									
fresh									
- at retail			sample	25gr	18	0			

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- at processing plant - HACPP or own checks by industry		sample	25gr	25	0			
meat products		sample	25gr	2	0			
- at retail		sample	25gr	2	0			
Other meat								
fresh								
- at slaughter		sample	25gr	5	0			
- at processing plant		sample	25gr	1	0			
- at retail		sample	25gr	8	0			
- at processing plant - HACPP or own checks by industry		sample	25gr	7	0			
- at retail - HACPP or own checks by industry		sample	25gr	1	0			
meat products		sample	25gr	5	0			
- at slaughter		sample	25gr	15	0			
- at processing plant		sample	25gr	1	0			
- at retail		sample	25gr	17	6			
Other processed food products								
prepared dishes		sample	25gr	2	0			
- HACPP or own checks by industry		sample	25gr	4	0			
cow milk								
raw		sample	25gr	4	0			
Dairy products		sample	25gr	12	0			
- HACPP or own checks by industry		sample	25gr	35	0			
Fishery products		sample	25gr	33	0			
- HACPP or own checks by industry		sample	25gr	18	0			
Other food		sample	25gr	39	0			

Footnote

Where not specified data refer to official controls.

The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.7.4. Yersinia in animals

A. Yersinia enterocolitica in pigs

Control program/mechanisms

The control program/strategies in place

The disease in animals is not notifiable and no control programs are in place at national level.

Table 8.1 Yersinia enterocolitica in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Y. enterocolitica	Y. enterocolitica O:3	Y. enterocolitica O:9
Cattle (bovine animals)			animal	301	55		
(Unit: herd)			herd	39	0		
- Control programme (Unit: animal)			animal	143	23		
- Control programme (Unit: herd)			herd	1	0		
Sheep			animal	480	1		
- Control programme			flock	2	0		
(Unit: flock)			flock	12	0		
Goats			animal	6	0		
(Unit: flock)			flock	1	0		
Pigs			animal	43	0		
(Unit: herd)			herd	27	0		
(Research activity)			herd	9	2		
Solipeds			animal	20	0		
Poultry			animal	11	0		
(Unit: flock)			flock	1	0		
- Control programme			animal	3	0		
Pet animals							
dogs			animal	12	0		
cats			animal	2	0		
Wildlife			animal	151	0		
- survey (local programme)			animal	55	1		
wild birds			flock	1	0		
hares			flock	2	0		
- survey (local programme)			animal	39	0		
Pigeons			animal	1	0		
Rabbits			animal	11	0		
- survey (local programme)			animal	75	0		
(Unit: flock)			flock	3	0		
Water buffalos			herd	3	0		
Other animals							
- Control programme			animal	102	1		
Zoo animals							

monkeys			animal	1	0		
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Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations.
The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

2.8. TRICHINELLOSIS

2.8.1. General evaluation of the national situation

A. Trichinellosis General evaluation

Additional information

The disease is notifiable in humans.

2.8.2. Trichinellosis in humans

Table 4.2.A Trichinellosis in man - species/serotype distribution

Trichinella	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc
	0	0	0	0	0	0
Trichinella spp.	0					

Footnote

No cases in 2004

Table 4.2.B Trichinellosis in man - age distribution

Age Distribution	Trichinella spp.		
	All	M	F
<1 year			
1 to 4 years			
5 to 14 years			
15 to 24 years			
25 to 44 years			
45 to 64 years			
65 years and older			
Age unknown			
Total :	0	0	0

Footnote

No cases in 2004

2.8.3. Trichinella in animals

A. Trichinella in pigs

Monitoring system

Sampling strategy

All slaughtered pigs are tested for *Trichinella* according to Directive 64/433/EEC.

Frequency of the sampling

Every slaughtered animal is sampled

Type of specimen taken

Diaphragm muscle

Diagnostic/analytical methods used

Artificial digestion method of collective samples

Table 4.1 Trichinella in animals

	Source of information	Remarks	Epidemiological unit	Animals tested	Animals positive
Pigs			animal	10044378	0
Solipeds			animal	43139	0
Wildlife					
wild boars			animal	35006	0
wolves			animal	2	0

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, at slaughter

2.9. ECHINOCOCCOSIS

2.9.1. General evaluation of the national situation

A. Echinococcus spp general evaluation

History of the disease and/or infection in the country

Echinococcosis is a compulsory notifiable disease. All slaughtered animals shall be inspected for evidence of hydatid cysts, according to the Directive 64/433/EEC. Specific national control planes for echinococcosis in dogs are not in place.

Additional information

The disease is notifiable in humans

2.9.2. Echinococcosis in humans

Table 9.2.A Echinococcosis in man - species/serotype distribution

Echinococcus	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc
E. granulosus	0	0	0	0	0	0
E. multilocularis						
Echinococcus spp.						

Footnote

Data not available

Table 9.2.B Echinococcosis in man - age distribution

Age Distribution	E. granulosus			E. multilocularis			Echinococcus spp.		
	All	M	F	All	M	F	All	M	F
<1 year									
1 to 4 years									
5 to 14 years									
15 to 24 years									
25 to 44 years									
45 to 64 years									
65 years and older									
Age unknown									
Total :	0	0	0	0	0	0	0	0	0

Footnote

Data not available

2.9.3. Echinococcus in animals

Table 9.1 Echinococcus sp. in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Echinococcus spp.	E. multilocularis	E. granulosus
Cattle (bovine animals)			animal	2171690	11023		
Sheep			animal	910189	8727		
Goats			animal	25220	47		
Pigs			animal	9657804	483		
Solipeds			animal	51814	18		
Wildlife							
other			animal	12891	102		

Footnote

The sources of informations are the regional veterinary services, through the local veterinary services, at slaughter

2.10. TOXOPLASMOSIS

2.10.1. General evaluation of the national situation

A. Toxoplasmosis general evaluation

History of the disease and/or infection in the country

The disease in animals is not notifiable and no control programs are in place at national level. A regional control programme has been carried out in Sardegna, where sera from sheep and goats have been collected and analyzed by indirect immunofluorescence assay. In positive flocks specific preventive measures are applied.

The establishment of the regional control programme follows the evidence of significant levels of infection in sheep and goats flocks and the relevant role of *T. gondii* in ovine and caprine abortion.

In particular, during the period 1999-2002, 9639 serum samples and 815 aborted samples (670 fetuses and 145 placenta) have been analyzed. The samples derived from 964 ovine and caprine farms distributed over all Sardinia island. After abortion notification, sera collected at random from adult animals were examined to detect simultaneously IgG and IgM antibodies specific to *Toxoplasma gondii* by indirect immunofluorescence assay, whereas fetuses and placenta were analyzed by a single tube nested PCR assay. Specific IgG antibodies were detected in 2048 (28.4%) sheep and 302 (12.3%) goats, specific IgM antibodies were found in 652 (9%) sheep and 139 (5.6%) goats. From a total of 2471 ovine and 362 caprine fetal samples including muscle, liver, abomasum, spleen, brain and placenta, 271 (11.1%) ovine and 23 (6.4%) caprine samples were *T. gondii* PCR-positive.

Additional information

The disease is notifiable in humans

2.10.2. Toxoplasmosis in humans

Table 10.2.A Toxoplasmosis in man - species/serotype distribution

Toxoplasma		Cases	Cases Inc
Toxoplasma spp.		0	0
congenital cases			

Footnote

Data not available

Table 10.2.B Toxoplasmosis in man - age distribution

Age Distribution	Toxoplasma spp.		
	All	M	F
<1 year			
1 to 4 years			
5 to 14 years			
15 to 24 years			
25 to 44 years			
45 to 64 years			
65 years and older			
Age unknown			
Total :	0	0	0

Footnote

Data not available

2.10.3. Toxoplasma in animals

Table 10.1 Toxoplasma gondii in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive
Cattle (bovine animals)			animal	43	32
(Unit: herd)			herd	13	0
- Control programme			sample	533	167
Sheep			animal	49	44
(Unit: herd)			herd	72	28
- Control programme (Unit: animal)			animal	7122	1433
- Control programme (Unit: sample)			sample	2645	0
- survey (local programme)			sample	29	23
Goats			animal	39	17
(Unit: herd)			herd	18	3
- Control programme			animal	756	116
Solipeds			herd	2	0
- Control programme			animal	3	1
Pet animals					
dogs			animal	892	28
- Control programme			animal	284	57
- survey (local programme)			sample	517	138
cats			sample	809	20
- Control programme			animal	3	0
- survey (local programme; Unit animal)			animal	27	0
- survey (local programme; Unit sample)			sample	173	58
(Research activity)			animal	130	0
Pigeons			animal	81	66
Other animals					
- Control programme			animal	3	0

Footnote

Data source: except where specifically indicated, data refer to diagnostic investigations.

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The sources of informations are the regional veterinary services, through the local veterinary services, and the Istituti Zooprofilattici Sperimentali (the Institutes that carry out the samples)

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

No cases of rabies have been recorded in Italy since December 1995.

Additional information

The disease is notifiable in humans

2.11.2. Lyssavirus (rabies) in animals

A. Rabies in dogs

Monitoring system

Diagnostic/analytical methods used

Fluorescent Antibody Test (FAT) on smears from hippocampus or medulla oblongata

Vaccination policy

In order to control the appearing and spreading of the disease, a vaccination campaign in foxes is in force in the Region Friuli Venezia Giulia, owing to the epidemiologic situation of the neighbouring countries, Austria, Slovenia and Croatia.

Other preventive measures than vaccination in place

- a surveillance programme on wildlife and an intense reduction of fox density have been implemented;
- stray dogs are captured;
- waste sites are controlled to reduce food availability to wild and domestic stray animals.

Notification system in place

Rabies is a compulsory notifiable disease in dogs and in any other animal.

Table 5.1 Rabies in animals

	Source of information	Remarks	Animals tested	Animals positive
Cattle (bovine animals)			24	0
Sheep			1	0
Wildlife				
bats			11	0
foxes			2554	0
other			390	0
all			2955	0
Pet animals				
dogs			432	0
cats			198	0
other			28	0

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1. E. COLI INDICATORS

3.1.1. General evaluation of the national situation

3.1.2. Antimicrobial resistance in *Escherichia coli* isolates

Table 13.1 Antimicrobial susceptibility testing of E.coli in animals

		E.coli											
		Cattle (bovine animals)		Pigs		Sheep		Rabbits		Gallus gallus		Turkeys	
Isolates out of a monitoring program		yes		yes		yes		yes		yes		yes	
Number of isolates available in the laboratory		471		180		114		81		182		103	
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	N	%R	N	%R	
Tetracycline	471	32.27%	166	80.70%	114	18.40%	69	0.00%	156	74.34%	73	90.41%	
Amphenicols													
Chloramphenicol	471	10.80%	166	28.96%	114	1.80%	69	28.99%	156	17.30%	73	20.55%	
Cephalosporin													
Cefazolin	471	0.63%	166	0.60%	114	0.90%	69	0.00%	156	2.56%	73	4.11%	
Cefotaxim	471	0.42%	166	0.00%	114	0.00%	69	0.00%	156	1.28%	73	0.00%	
Fluoroquinolones													
Enrofloxacin	471	6.37%	166	4.77%	114	2.60%	69	10.14%	156	10.25%	73	19.18%	
Quinolones													
Nalidixic acid	471	12.95%	166	6.60%	114	2.60%	69	53.62%	156	42.30%	73	56.16%	
Trimethoprim	264	17.42%	86	29.70%			69	43.48%	74	32.43%	73	39.73%	
Sulfonamides													
Sulfonamide	157	27.40%	80	78.80%	114	10.50%			82	42.70%			
Aminoglycosides													
Streptomycin	471	21.90%	166	49.39%	114	9.60%	69	79.71%	156	35.89%	73	39.73%	
Gentamicin	471	4.20%	166	1.07%	114	0.00%	69	30.43%	156	1.28%	73	6.85%	
Kanamycin	471	10.18%	166	10.24%	114	1.80%	69	17.39%	156	8.97%	73	15.07%	
Trimethoprim + sulfonamides	157	14.60%	80	67.50%	114	7.00%			82	36.60%			
Penicillins													
Ampicillin	471	18.03%	166	54.30%	114	14.00%	69	43.48%	156	53.20%	73	68.49%	
Number of multiresistant isolates													
fully sensitives	471	61.99%	166	15.05%	114	78.07%	69	1.45%	156	16.02%	73	2.74%	
resistant to 1 antimicrobial	471	4.97%	166	8.43%	114	6.14%	69	0%	156	10.26%	73	10.96%	
resistant to 2 antimicrobials	471	5.52%	166	7.83%	114	6.14%	69	7.25%	156	12.80%	73	8.22%	
resistant to 3 antimicrobials	471	5.30%	166	12.70%	114	2.63%	69	11.59%	156	17.30%	73	15.07%	
resistant to 4 antimicrobials	471	4.24%	166	14.45%	114	0.00%	69	20.29%	156	10.39%	73	15.07%	
resistant to >4 antimicrobials	471	16.34%	86	41.54%	114	7.02%	69	59.42%	156	32.05%	73	47.95%	

Footnote

Data source: NRC-ANTI

Table Antimicrobial susceptibility testing of E.coli in Cattle (bovine animals) - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
E.coli																																		
Cattle (bovine animals)																																		
Isolates out of a monitoring program		yes																																
Number of isolates available in the laboratory		471																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		421	35.87%	133	2	2	5	3	1	1	1	3	6	9	17	15	22	24	25	48	43	21	10	6	12	3	5	3	1					
Amphenicols																																		
Chloramphenicol		421	12.11	46		1	3	1				1			2	3	3	8	22	39	25	60	56	57	41	27	19	2	3	1	1			
Cephalosporin																																		
Cefazolin		421	0.71	3									3	2	1	5	7	27	24	36	83	82	59	62	15	7	3	1	1					
Cefotaxim(2)		421	0.48					1	1								1				1	1	1	3	3	12	6	18	27	32	49	51	64	
Fluoroquinolones																																		
Enrofloxacin(1)		421	5.94	24				1								4	4	5	5	2	6	8	4	1	14	17	21	36	41	37	62	41	35	
Quinolones																																		
Nalidixic acid		421	14.49	55		4	1			1				3	1	3	13	20	33	44	51	48	58	42	17	15	4	5	2		1			
Trimethoprim		264	17.42%	37			8	1	2	2	3		5	5	4	3	2	5	3	9	7	15	19	19	22	20	21	22	12	9				
Sulfonamides																																		
Sulfonamide		157	26.11	41											1	4		9	9	12	14	26	11	6	7	6	5	2	3	1				
Aminoglycosides																																		
Streptomycin		421	24.70	72		7	3	15	7	15	7	16	28	37	27	40	38	53	27	15	4	5	2	1	1						1			
Gentamicin		421	4.75	7		2	2	1	3	5	7	5	7	6	2	12	2	16	29	45	59	72	73	39	15	10	1		1					
Kanamycin		421	11.40	37		2		2	2	3	2	2	2	3	1	5	10	19	33	52	72	72	45	32	14	7	4							
Trimethoprim + sulfonamides		157	14.65%	22			1		1				1		1	2	1	3	3	2		1	5	3	8	7	20	28	21	17	7	3		
Penicillins																																		
Ampicillin		421	20.19	80					2	1	2	2	4	10	17	30	44	55	44	47	39	23	11	8	2									

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 27

37 = 12

38 = 4

39 =	2
40 =	7
41 =	-
42 =	1
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.	
Other values:	
36 =	51
37 =	43
38 =	28
39 =	10
40 =	10
41 =	7
42 =	2
43 =	1
44 =	-
45 =	-
46 =	-
47 =	1

Table Antimicrobial susceptibility testing of E.coli in Pigs - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
E.Coli																																		
Pigs																																		
Isolates out of a monitoring program		yes																																
Number of isolates available in the laboratory		180																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		166	80.72%	121	1	3	2	4	1				2	1	2	7	1	3	7	2	1	2	3		1	2								
Amphenicols																																		
Chloramphenicol		166	28.92	33		3	3	2	5	2	1				2	2	5	5	5	5	10	13	17	16	11	13	11	4	2			1		
Cephalosporin																																		
Cefazolin		166	0.60				1								1	2	9	18	15	29	23	29	17	12	5	4		1						
Cefotaxim(2)		166	0.00																			2	1	1	3	1	10	11	10	21	17	25		
Fluoroquinolones																																		
Enrofloxacin(1)		166	5.42	8	1										1	2		1		1		5		1	3	6	10	18	18	19	29	17	15	
Quinolones																																		
Nalidixic acid		166	6.63	10				1						1		1	2	8	17	23	41	18	17	14	7	4		2						
Trimethoprim		86	29.70%	21		1		3	4	3	3	3	1		3	2	3	3	4	2	2	1	5	1	1	2	5	2	2	6	2	1		
Sulfonamides																																		
Sulfonamide		80	78.75	63														2		2		2	3	2	1	2	1	1				1		
Aminoglycosides																																		
Streptomycin		166	48.19	53	1		5	13	8						10	10	7	4	5	1	1													
Gentamicin		166	1.20							2	2	1	1	1	1	4	3	7	15	11	25	37	25	19	6	4	1	1						
Kanamycin		166	10.24	16			1							1	1	2	4	10	11	24	26	40	14	10	5					1				
Trimethoprim + sulfonamides		80	67.50%	54										1		1	1	2	1	1	1		1		2	1	4	3	4	1	1		1	
Penicillins																																		
Ampicillin		166	54.22	83			3		1	2	1			3	5	6	8	13	15	9	7	4	2	2	2									

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 3

37 = 3

38 = 3

39 = 1
40 = 1
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 28
37 = 20
38 = 7
39 = 2
40 = 3
41 = 1
42 = 1
43 = -
44 = 2

Table Antimicrobial susceptibility testing of E.coli in Poultry - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
E.coli																																		
Poultry																																		
Isolates out of a monitoring program		yes																																
Number of isolates available in the laboratory		182																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		156	74.36%	101	2		2	10	1					1			4	3	2	7	14	6	1	1		1								
Amphenicols																																		
Chloramphenicol		156	17.31	24				1	2									1	3	5	8	13	24	18	17	20	12	4	2	2				
Cephalosporin																																		
Cefazolin		156	3.21	3						2					2	3	8	15	16	24	22	24	20	10	5	1	1							
Cefotaxim(2)		156	1.28						1			1			1							1	1	1	1	2	4	10	17	21	17	24		
Fluoroquinolones																																		
Enrofloxacin(1)		156	8.97	9	1	1	1		1				1	1		1	4	7	4	5	5	7	6	7	1	9	11	10	20	14	9	7	5	
Quinolones																																		
Nalidixic acid		156	42.31	56		1	2	6	1									4	16	11	21	11	13	8	2	1	1	1	1					
Trimethoprim		74	32.43%	22			2			1				1	2	3	3	1	5	4	1	4	1	4	5	2	5	2	1	3	1			
Sulfonamides																																		
Sulfonamide		82	42.68	35														3	4	3	7	7	9	2	5	3	1	2	1					
Aminoglycosides																																		
Streptomycin		156	35.90	47		1	1	3	4	5	7	6	14	11	10	12	13	13	4	3	1	1												
Gentamicin		156	1.28	2								1	1	1	2	1	5	10	12	9	27	35	22	15	7	2	2	1						
Kanamycin		156	8.97	12			1			1				1	4	1	2	5	14	21	21	38	17	9	5	4								
Trimethoprim + sulfonamides		82	36.59%	30											2	2	2		1	1				1	2	8	12	5	5	1				
Penicillins																																		
Ampicillin		156	53.21	79	1	1			1	1		1	2		1	8	17	10	4	14	7	3	2	3		1								

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 6

37 = 3

38 = -

39 = 1
(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 21
37 = 12
38 = 7
39 = 6
40 = 2
41 = 2
42 = 3
43 = 1

332

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

 $36 = 1$ $37 = 2$ $38 = 1$ $39 = 2$
$$\frac{2}{3} = \frac{1}{40}$$
 $41 = 1$

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 8
37 = 6
38 = 8
39 = 5
40 = 4
41 = 2

Table Antimicrobial susceptibility testing of E.coli in Rabbits - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
E.coli																																		
Rabbits																																		
Isolates out of a monitoring program		yes																																
Number of isolates available in the laboratory		81																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		69	0.00%	62		1	3	2								1																		
Amphenicols																																		
Chloramphenicol		69	29.99	18				1	1				1	2				1	3	7	5	6	13	7	2	1			1					
Cephalosporin																																		
Cefazolin		69	0.00											1	1		2	7	9	6	8	13	10	3	3	2	3	1						
Cefotaxim(2)		69	0.00																							2	1	4	2	9	9	10	9	
Fluoroquinolones																																		
Enrofloxacin(1)		69	10.14	5								1		1		4	4	6	5	1	4		3	2	6	6	4	7	4	2	2			
Quinolones																																		
Nalidixic acid		69	53.62	31		1	3	1	1			1		1		1	1	4	10	5	4	3		1				1						
Trimethoprim		69	43.48%	25			4	1	3	2	1	2	2	4	6	3	2	3	2	2	1	1	1											
Aminoglycosides																																		
Streptomycin		69	79.71	34		1	6	10	4	3		1	4	4	1		1																	
Gentamicin		69	30.43	7		1	1	2	5	5	2	3	3	2	3	2	2	1	4	8	4	5	6		1	2								
Kanamycin		69	17.39	9						2	1		1	5	8	4	5	6	7	9	5		4	2	1									
Penicillins																																		
Ampicillin		69	43.48	28						2		1	2	1	3	7	11	3	6	3	2													

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 2

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 7

37 = 4

38 = 3

39 = 5

40 = 2

41 = -
42 = 2

Table Antimicrobial susceptibility testing of E.coli in Sheep - quantitative data [Diffusion method]

Percentage of resistant isolates (R%) and percentage of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																		
E.coli																																		
Sheep																																		
Isolates out of a monitoring program		yes																																
Number of isolates available in the laboratory		114																																
Antimicrobials:		N	%R	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Tetracycline		114	17.54%	20													1	4	14	23	19	18	7	2	4			1						
Amphenicols																																		
Chloramphenicol		114	1.75	2												1		1	4	4	9	12	17	21	18	8	12	4	1					
Cephalosporin																																		
Cefazolin		114	0.88					1									3	1	5	21	35	25	15	7	1									
Cefotaxim(2)		114	0.00																							3	2	10	13	18	17	18	14	
Fluoroquinolones																																		
Enrofloxacin(1)		114	1.75	2																		2	1	1	2	3	7	9	19	21	14	15	7	
Quinolones																																		
Nalidixic acid		114	2.63	3														3	10	20	21	18	22	10	5	1								
Sulfonamides																																		
Sulfonamide		114	10.53	12												3	4	13	4	13	11	16	7	9	6	7	4	2	2					
Aminoglycosides																																		
Streptomycin		114	9.65	9				2		1			12	11	15	19	17	13	6	3	5		1											
Gentamicin		114	0.00								1						2	2	6	14	21	24	26	10	5	1	2							
Kanamycin		114	1.75	2												1	2	9	12	18	24	23	18	2	1	2								
Trimethoprim + sulfonamides		114	7.02%	8																1	1	4	2	5	7	7	20	21	18	6	10	4		
Penicillins																																		
Ampicillin		114	14.04	14							1	1			9	19	19	21	16	10	2	2												

(1) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.

Other values:

36 = 6

37 = 3

38 = 1

39 = -

40 = 1

(2) : Zone diameter (mm), percentage of isolates with a zone of inhibition equal to.
Other values:
36 = 8
37 = 10
38 = 1

4. FOODBORNE OUTBREAKS

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