European Food Safety Authority

ZOONOSES MONITORING

CROATIA

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

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

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

IN 2013

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Croatia

Reporting Year: 2013

Laboratory name	Description	Contribution
Ministry of Agriculture (MA), Veterinary and Food Safety Directorate (VFSD)	The Ministry of Agriculture is the central competent authority responsible for food and feed safety, hygiene and quality as well as for animal health and animal welfare.	Preparation of national report, monitoring programs and control plans. Implementation and co-ordination of official controls (performed by veterinary inspectors). Sampling, collecting and reporting data concerning notifiable zoonoses in animals, food of animal origin and feed. Contact point for European Commission in accordance with Article 3 of Regulation 2003/99/EC.
Ministry of Health (MH), Directorate for Sanitary Inspection (DSI)	The Ministry of Health is the competent authority responsible for preservation and improvement of human health, early recognition of risks from illness and illness prevention, treatment and rehabilitation of patients, and promotion of healthy life styles.	Preparation of national report, monitoring programs and inspection plans. Implementation and co-ordination of official inspections (performed by sanitary inspectors) of food of non-animal origin, composite food and food of animal origin at the retail level (with the exception of establishments approved by the MA). Sampling, collecting and reporting data concerning notifiable zoonoses in foodstuffs.

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Laboratory name	Description	Contribution
Croatian Veterinary Institute (CVI)	Research, diagnostic and analytical institute primarily engaged in the diagnostics of infectious and parasitic animal diseases, analysis of food of animal origin and animal feed, control of veterinary medicinal products and scientific research. Provides laboratory services for animal health programs, official controls of animal health, food of animal origin and feed.	Laboratory testing, collecting and reporting data concerning notifiable zoonoses, zoonotic agents and antimicrobial resistance in animals, food of animal origin and feed.
Croatian National Institute of Public Health (CNIPH)	Central national public health institution, acting within the national health care system, coordinated by the Ministry of Health. Its task is to ensure the health of inhabitants and others occurring within the Republic of Croatia, by monitoring, preventing and controlling communicable and other, non−communicable and chronic mass diseases.	Laboratory testing, collecting and reporting data concerning notifiable zoonoses and zoonotic agents in foodstuffs.
Croatian National Institute of Public Health - Epidemiology Service	National institute's service that coordinates all epidemiology services in the country. It protects the population from infectious diseases by surveillance and monitoring, outbreak investigation and protu-epidemic measures, scientific advisory service.	Provides data on foodborne outbreaks.
Faculty of Veterinary Medicine (FVM)	Performs laboratory analyses for animal health programmes and official control purposes in the veterinary field. The FVM is designated to provide official controls in the veterinary field for: Leptospirosis, Equine infectious anaemia, Equine viral arteritis, Trichinella and Avian Chlamydiosis.	Laboratory testing and collecting data on zoonoses and zoonotic agents in animals.
Institute of Public Health „Dr. Andrija Štampar“	Public Health Institution for the City of Zagreb with the authority for analytical activity issued by the Ministry of Health and the authority of the Ministry of Agriculture.	Laboratory testing, collecting data concerning zoonotic agents in foodstuffs.

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Laboratory name	Description	Contribution
Croatian Food Agency (CFA)	The Croatian Food Agency is a government-appointed authority within the portfolio of the MA. The CFA is independent and provides scientific and technical support for legislation and any topic which has a direct or indirect impact on food and feed safety.	Co-ordination of reporting.

PREFACE

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

The report contains information on trends and sources of zoonoses and zoonotic agents in Croatia during the year 2013 .

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

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

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

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

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

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1. ANIMAL POPULATIONS

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

A. Information on susceptible animal population

Sources of information

Croatian Agriculture Agency- Unique Livestock Register

Dates the figures relate to and the content of the figures

n/a

Definitions used for different types of animals, herds, flocks and holdings as well as the types covered by the information

According to the legislation.

National evaluation of the numbers of susceptible population and trends in these figures

n/a

Geographical distribution and size distribution of the herds, flocks and holdings

21 counties.

Additional information

n/a

Table Susceptible animal populations

* Only if different than current reporting year

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	- in total					465300	2013	35338	2013
Ducks	- in total					166398	2013	10543	2013
Gallus gallus (fowl)	- in total					13051593	2013	88643	2013
Geese	- in total					42903	2013	5202	2013
Goats	- in total					67277	2013		
Pigs	- in total					1665871	2013	128575	2013
Sheep	- in total					590474	2013	18332	2013
Solipeds, domestic	horses - in total					23832	2013	4197	2013
Turkeys	- in total					699671	2013	13741	2013

2. INFORMATION ON SPECIFIC ZOONOSES AND ZOONOTIC AGENTS

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

2.1 SALMONELLOSIS

2.1.1 General evaluation of the national situation

2.1.2 Salmonella in foodstuffs

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Cheeses made from goats' milk - fresh - made from raw or low heat-treated milk - Processing plant - Surveillance	MH	Selective sampling	Official sampling	food sample	Domestic	Single	25g	5	0		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Cheeses made from goats' milk - fresh - made from raw or low heat-treated milk - Processing plant - Surveillance		

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Vegetables - pre-cut - ready-to-eat - Retail - Surveillance	MH	Selective sampling	Official sampling	food sample	Domestic	Single	25g	99	0		
Infant formula - dried - intended for infants below 6 months - Retail - Surveillance	MH	Selective sampling	Official sampling	food sample	Intra EU trade	Batch	25g	90	0		
Bakery products - cakes - Retail - Monitoring	MH	Selective sampling	Official sampling	food sample	Domestic	Single	25g	276	0		
Dairy products, unspecified - Retail - Monitoring (ice cream)	MH	Selective sampling	Official sampling	food sample	Domestic	Single	25g	429	0		
Ready-to-eat salads - Retail - Monitoring (mixed ready-to-eat food)	MH	Selective sampling	Official sampling	food sample	Domestic	Single	25g	386	0		
Spices and herbs - dried - Retail - Monitoring	MH	Selective sampling	Official sampling	food sample	Unknown	Single	25g	47	0		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Vegetables - pre-cut - ready-to-eat - Retail - Surveillance		
Infant formula - dried - intended for infants below 6 months - Retail - Surveillance		
Bakery products - cakes - Retail - Monitoring		
Dairy products, unspecified - Retail - Monitoring (ice cream)		

Table Salmonella in other food

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Ready-to-eat salads - Retail - Monitoring (mixed ready-to-eat food)		
Spices and herbs - dried - Retail - Monitoring		

Footnote:

MH - Ministry of Health

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from pig - minced meat - intended to be eaten cooked - Retail - Surveillance	MH	Selective sampling	Official sampling	food sample > meat	Domestic	Single	25 g	325	1		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Meat from pig - minced meat - intended to be eaten cooked - Retail - Surveillance		1

2.1.3 Salmonella in animals

Table Salmonella in breeding flocks of Gallus gallus

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes	118	CVI	Census	Official and industry sampling	animal sample > faeces	Domestic	yes	Flock	118	0	

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes						

Table Salmonella in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-
Cattle (bovine animals) - calves (under 1 year) - Farm - Monitoring		Objective sampling	Official sampling	animal sample > caecum	Domestic	Herd	468	5	1	1	
Pigs - fattening pigs - Slaughterhouse - Monitoring		Objective sampling	Official sampling	animal sample > lymph nodes	Domestic	Herd	334	26	8	10	
Pigs - fattening pigs - Slaughterhouse - Monitoring		Objective sampling	Official sampling	food sample > carcase swabs	Domestic	Herd	334	15		5	2

	Salmonella spp., unspecified
Cattle (bovine animals) - calves (under 1 year) - Farm - Monitoring	3
Pigs - fattening pigs - Slaughterhouse - Monitoring	8
Pigs - fattening pigs - Slaughterhouse - Monitoring	8

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - laying hens - adult - Farm - Control and eradication programmes	322	CVI	Census	Official and industry sampling	animal sample > faeces	Domestic	yes	Flock	322	9	9
Gallus gallus (fowl) - broilers - before slaughter - Farm - Control and eradication programmes	3053	CVI	Census	Official and industry sampling	environmental sample > boot swabs	Domestic	yes	Flock	3053	9	5
Gallus gallus (fowl) - broilers - before slaughter - Farm - Control and eradication programmes			Census	Industry sampling			yes				
Gallus gallus (fowl) - broilers - before slaughter - Farm - Control and eradication programmes			Census	Official and industry sampling			yes				
Turkeys - breeding flocks, unspecified - day-old chicks - Farm - Control and eradication programmes			Objective sampling	Official sampling	animal sample > faeces	Domestic	yes	Flock			
Turkeys - breeding flocks, unspecified - adult - Farm - Control and eradication programmes	8	CVI	Census	Official and industry sampling	animal sample > faeces	Domestic	yes	Flock	8	0	
Turkeys - breeding flocks, unspecified - adult - Farm - Control and eradication programmes			Census	Industry sampling			yes				
Turkeys - breeding flocks, unspecified - adult - Farm - Control and eradication programmes				Official sampling			yes				
Turkeys - fattening flocks - before slaughter - Farm - Control and eradication programmes	202	CVI	Census	Official and industry sampling	environmental sample > boot swabs	Domestic	yes	Flock	202	3	
Turkeys - fattening flocks - before slaughter - Farm - Control and eradication programmes			Census	Industry sampling			yes				
Turkeys - fattening flocks - before slaughter - Farm - Control and eradication programmes				Official sampling			yes				

Table Salmonella in other poultry

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - laying hens - adult - Farm - Control and eradication programmes			
Gallus gallus (fowl) - broilers - before slaughter - Farm - Control and eradication programmes	4		
Gallus gallus (fowl) - broilers - before slaughter - Farm - Control and eradication programmes			
Gallus gallus (fowl) - broilers - before slaughter - Farm - Control and eradication programmes			
Turkeys - breeding flocks, unspecified - day-old chicks - Farm - Control and eradication programmes			
Turkeys - breeding flocks, unspecified - adult - Farm - Control and eradication programmes			
Turkeys - breeding flocks, unspecified - adult - Farm - Control and eradication programmes			
Turkeys - breeding flocks, unspecified - adult - Farm - Control and eradication programmes			
Turkeys - fattening flocks - before slaughter - Farm - Control and eradication programmes	3		
Turkeys - fattening flocks - before slaughter - Farm - Control and eradication programmes			
Turkeys - fattening flocks - before slaughter - Farm - Control and eradication programmes			

Table Salmonella in other poultry

2.1.4 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Compound feedingstuffs for cattle - final product - Feed mill - Surveillance	Laboratory report	Objective sampling	Official sampling	feed sample	Domestic	Batch	500g	120	0		
Compound feedingstuffs for pigs - final product - Feed mill - Surveillance	Laboratory report	Selective sampling	Official sampling	feed sample	Domestic	Batch	500g	47	3		1
Compound feedingstuffs for poultry (non specified) - final product - Feed mill - Surveillance	Laboratory report	Objective sampling	Official sampling	feed sample	Domestic	Batch	500	62	2		
Compound feedingstuffs for poultry - breeders - final product - Feed mill - Surveillance	Laboratory report	Objective sampling	Official sampling	feed sample	Domestic	Batch	500	59	1		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Compound feedingstuffs for cattle - final product - Feed mill - Surveillance		
Compound feedingstuffs for pigs - final product - Feed mill - Surveillance		2
Compound feedingstuffs for poultry (non specified) - final product - Feed mill - Surveillance		2
Compound feedingstuffs for poultry - breeders - final product - Feed mill - Surveillance		1

Table Salmonella in compound feedingstuffs

Table Salmonella in feed material of animal origin

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of land animal origin - greaves - Feed mill - Surveillance	7	Objective sampling	Official sampling	feed sample	Domestic	Single	500ml	7	0		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Feed material of land animal origin - greaves - Feed mill - Surveillance		

Footnote:

Graves=poultry fat

Table Salmonella in other feed matter

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Surveillance	Laboratory report	Objective sampling	Official sampling	feed sample	Imported from outside EU	Single	500	36	5		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Surveillance		5

2.1.5 Antimicrobial resistance in Salmonella isolates

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

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

S. Enteritidis	Gallus gallus (fowl) - broilers - during rearing period																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	5																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	5	0									3	1		1										
Aminoglycosides - Streptomycin	32	5	0												1	3		1								
Amphenicols - Chloramphenicol	16	5	0													1	4									
Cephalosporins - Cefotaxime	0.5	5	1							2	2					1										
Fluoroquinolones - Ciprofloxacin	0.064	5	0						5																	
Penicillins - Ampicillin	8	5	2												2	1			2							
Quinolones - Nalidixic acid	16	5	0													5										
Sulfonamides	256	5	2																1	2				2		
Tetracyclines - Tetracycline	8	5	0											1	4											
Trimethoprim	2	5	0										5													
Cephalosporins - Ceftazidime	2	5	1									4						1								

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

S. Enteritidis	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

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

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - before slaughter																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	16																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	16	0									9	3	3	1										
Aminoglycosides - Streptomycin	32	16	0												2	10	4								
Amphenicols - Chloramphenicol	16	16	0												1	3	10	2							
Cephalosporins - Cefotaxime	0.5	16	0							8	7	1													
Fluoroquinolones - Ciprofloxacin	0.064	16	1				3		12		1														
Penicillins - Ampicillin	8	16	0											7	6	1	2								
Quinolones - Nalidixic acid	16	16	1													15				1					
Sulfonamides	256	16	2																2	9	2	1		2	
Tetracyclines - Tetracycline	8	16	0											4	12										
Trimethoprim	2	16	2										13	1		1			1						
Cephalosporins - Ceftazidime	2	16	0									13	3												

S. Enteritidis	Gallus gallus (fowl) - laying hens - before slaughter	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	16	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - before slaughter	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	16	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

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

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - during rearing period																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	4																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	4	0										3	1											
Aminoglycosides - Streptomycin	32	4	0													3	1								
Amphenicols - Chloramphenicol	16	4	0														4								
Cephalosporins - Cefotaxime	0.5	4	0							1	3														
Fluoroquinolones - Ciprofloxacin	0.064	4	0				4																		
Penicillins - Ampicillin	8	4	0											1	3										
Quinolones - Nalidixic acid	16	4	0													4									
Sulfonamides	256	4	0																	3	1				
Tetracyclines - Tetracycline	8	4	0													4									
Trimethoprim	2	4	0										4												
Cephalosporins - Ceftazidime	2	4	0									4													

S. Enteritidis	Gallus gallus (fowl) - laying hens - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of S. Enteritidis in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Enteritidis	Turkeys - fattening flocks																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	1																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	1	0										1													
Aminoglycosides - Streptomycin	32	1	0													1										
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0.5	1	0								1															
Fluoroquinolones - Ciprofloxacin	0.064	1	0				1																			
Penicillins - Ampicillin	8	1	0											1												
Quinolones - Nalidixic acid	16	1	0													1										
Sulfonamides	256	1	0																	1						
Tetracyclines - Tetracycline	8	1	0												1											
Trimethoprim	2	1	0										1													
Cephalosporins - Ceftazidime	2	1	0									1														

S. Enteritidis	Turkeys - fattening flocks	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Enteritidis in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Enteritidis	Turkeys - fattening flocks	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

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

S. Typhimurium	Gallus gallus (fowl) - broilers - during rearing period																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	3																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	3	0									1	1	1												
Aminoglycosides - Streptomycin	32	3	0														1	2								
Amphenicols - Chloramphenicol	16	3	0													1	2									
Cephalosporins - Cefotaxime	0.5	3	0							3																
Fluoroquinolones - Ciprofloxacin	0.064	3	0				1		2																	
Penicillins - Ampicillin	8	3	0											1	2											
Quinolones - Nalidixic acid	16	3	0													3										
Sulfonamides	256	3	0																	3						
Tetracyclines - Tetracycline	8	3	1												2					1						
Trimethoprim	2	3	0										3													
Cephalosporins - Ceftazidime	2	3	0									3														

S. Typhimurium	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

S. Typhimurium	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

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

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

S. Typhimurium	Gallus gallus (fowl) - laying hens - before slaughter																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	2																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	2	0										2													
Aminoglycosides - Streptomycin	32	2	0														1	1								
Amphenicols - Chloramphenicol	16	2	0														2									
Cephalosporins - Cefotaxime	0.5	2	0							2																
Fluoroquinolones - Ciprofloxacin	0.064	2	0				1		1																	
Penicillins - Ampicillin	8	2	0												2											
Quinolones - Nalidixic acid	16	2	0													2										
Sulfonamides	256	2	0																1	1						
Tetracyclines - Tetracycline	8	2	0												2											
Trimethoprim	2	2	0										2													
Cephalosporins - Ceftazidime	2	2	0									2														

S. Typhimurium	Gallus gallus (fowl) - laying hens - before slaughter	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

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

S. Typhimurium	Gallus gallus (fowl) - laying hens - before slaughter	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of S. Typhimurium in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Typhimurium	Turkeys - fattening flocks																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	4																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	4	0									2		2												
Aminoglycosides - Streptomycin	32	4	0														1	2	1							
Amphenicols - Chloramphenicol	16	4	0													1	3									
Cephalosporins - Cefotaxime	0.5	4	1							1	2			1												
Fluoroquinolones - Ciprofloxacin	0.064	4	1						3			1														
Penicillins - Ampicillin	8	4	0												4											
Quinolones - Nalidixic acid	16	4	0														3	1								
Sulfonamides	256	4	1																1	2				1		
Tetracyclines - Tetracycline	8	4	0												3		1									
Trimethoprim	2	4	0										2		2											
Cephalosporins - Ceftazidime	2	4	0									1	2		1											

S. Typhimurium	Turkeys - fattening flocks	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Typhimurium in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Typhimurium	Turkeys - fattening flocks	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of S. Agona in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

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

S. Agona	Gallus gallus (fowl) - broilers - during rearing period																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	3																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	3	0										2	1												
Aminoglycosides - Streptomycin	32	3	0														2	1								
Amphenicols - Chloramphenicol	16	3	0														3									
Cephalosporins - Cefotaxime	0.5	3	0								3															
Fluoroquinolones - Ciprofloxacin	0.064	3	0				3																			
Penicillins - Ampicillin	8	3	0											3												
Quinolones - Nalidixic acid	16	3	0													3										
Sulfonamides	256	3	0																2	1						
Tetracyclines - Tetracycline	8	2	0												2											
Trimethoprim	2	3	0										3													
Cephalosporins - Ceftazidime	2	3	0										3													

S. Agona	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		

Table Antimicrobial susceptibility testing of S. Agona in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

S. Agona	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of S. Infantis in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

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

S. Infantis	Gallus gallus (fowl) - broilers - during rearing period																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	18																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	18	0									7	10	1												
Aminoglycosides - Streptomycin	32	18	2														6	10		1	1					
Amphenicols - Chloramphenicol	16	18	2														5	11	2							
Cephalosporins - Cefotaxime	0.5	18	2								1	12	3	2												
Fluoroquinolones - Ciprofloxacin	0.064	18	17						1				6	9			2									
Penicillins - Ampicillin	8	18	6											2	3	6	1	1	5							
Quinolones - Nalidixic acid	16	18	18																	18						
Sulfonamides	256	18	2															1	4	7	4			2		
Tetracyclines - Tetracycline	8	18	4												1	12	1	1		3						
Trimethoprim	2	18	0										15	3												
Cephalosporins - Ceftazidime	2	18	0										6	10	2											

S. Infantis	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	18	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		

Table Antimicrobial susceptibility testing of S. Infantis in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

S. Infantis	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	18	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of S. Hadar in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

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

S. Hadar	Gallus gallus (fowl) - broilers - during rearing period																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	1																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	1	0									1														
Aminoglycosides - Streptomycin	32	1	0														1									
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0.5	1	0							1																
Fluoroquinolones - Ciprofloxacin	0.064	1	0				1																			
Penicillins - Ampicillin	8	1	0											1												
Quinolones - Nalidixic acid	16	1	0													1										
Sulfonamides	256	1	0																	1						
Tetracyclines - Tetracycline	8	2	0												2											
Trimethoprim	2	1	0										1													
Cephalosporins - Ceftazidime	2	1	0										1													

S. Hadar	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		

Table Antimicrobial susceptibility testing of S. Hadar in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

S. Hadar	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of S. Mbandaka in Gallus gallus (fowl) - broilers - during rearing period - Domestic - Surveillance - Official sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

S. Mbandaka	Gallus gallus (fowl) - broilers - during rearing period - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	26																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	26	1									8	15	1	1				1							
Aminoglycosides - Streptomycin	32	26	6														16	3	1		6					
Amphenicols - Chloramphenicol	16	26	1													1	24			1						
Cephalosporins - Cefotaxime	0.5	26	5							2	15	4				5										
Fluoroquinolones - Ciprofloxacin	0.064	26	26								20	1	1	3			1									
Penicillins - Ampicillin	8	26	6										1	15	4			1	5							
Quinolones - Nalidixic acid	16	26	26																	26						
Sulfonamides	256	26	5																4	5	11	1		5		
Tetracyclines - Tetracycline	8	26	5											7	13	1				5						
Trimethoprim	2	26	4										21	1					4							
Cephalosporins - Ceftazidime	2	26	5									4	15	2				5								

S. Mbandaka	Gallus gallus (fowl) - broilers - during rearing period - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	26	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		

Table Antimicrobial susceptibility testing of S. Mbandaka in Gallus gallus (fowl) - broilers - during rearing period - Domestic - Surveillance - Official sampling - environmental sample - boot swabs - quantitative data [Dilution method]

S. Mbandaka	Gallus gallus (fowl) - broilers - during rearing period - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	26	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

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

Other serovars	Gallus gallus (fowl) - broilers - during rearing period																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	11																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	11	0									3	7	1												
Aminoglycosides - Streptomycin	32	11	0														11									
Amphenicols - Chloramphenicol	16	11	0													1	10									
Cephalosporins - Cefotaxime	0.5	11	0							1	5	4	1													
Fluoroquinolones - Ciprofloxacin	0.064	11	8						3		6			2												
Penicillins - Ampicillin	8	11	2											3	5	1		1	1							
Quinolones - Nalidixic acid	16	11	8													3				8						
Sulfonamides	256	11	2																3	4	2			2		
Tetracyclines - Tetracycline	8	11	0												10	1										
Trimethoprim	2	11	0										10	1												
Cephalosporins - Ceftazidime	2	11	0									6	5													

Other serovars	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	11	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - broilers - during rearing period - quantitative data [Dilution method]

Other serovars	Gallus gallus (fowl) - broilers - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	11	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - laying hens - during rearing period - quantitative data [Dilution method]

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

Other serovars	Gallus gallus (fowl) - laying hens - during rearing period																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	2																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	2	0									1	1													
Aminoglycosides - Streptomycin	32	2	0													1		1								
Amphenicols - Chloramphenicol	16	2	0													1	1									
Cephalosporins - Cefotaxime	0.5	2	0									2														
Fluoroquinolones - Ciprofloxacin	0.064	2	0				2																			
Penicillins - Ampicillin	8	2	0												2											
Quinolones - Nalidixic acid	16	2	0													2										
Sulfonamides	256	2	0																	2						
Tetracyclines - Tetracycline	8	2	0											1	1											
Trimethoprim	2	2	0										2													

Other serovars	Gallus gallus (fowl) - laying hens - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - laying hens - during rearing period - quantitative data [Dilution method]

Other serovars	Gallus gallus (fowl) - laying hens - during rearing period	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of Other serovars in Turkeys - fattening flocks - Farm - Domestic - Surveillance - Official sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

Other serovars	Turkeys - fattening flocks - Farm - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	3																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	3	0									1	1	1												
Aminoglycosides - Streptomycin	32	3	0															3								
Amphenicols - Chloramphenicol	16	3	1														1	1	1							
Cephalosporins - Cefotaxime	0.5	3	0							1		1	1													
Fluoroquinolones - Ciprofloxacin	0.064	3	2						1				2													
Penicillins - Ampicillin	8	3	0												3											
Quinolones - Nalidixic acid	16	3	2														1			2						
Sulfonamides	256	3	1																	2				1		
Tetracyclines - Tetracycline	8	3	0												1	2										
Trimethoprim	2	3	0										3													

Other serovars	Turkeys - fattening flocks - Farm - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		

Table Antimicrobial susceptibility testing of Other serovars in Turkeys - fattening flocks - Farm - Domestic - Surveillance - Official sampling - environmental sample - boot swabs - quantitative data [Dilution method]

Other serovars	Turkeys - fattening flocks - Farm - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. Typhimurium in Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - caecum - quantitative data [Dilution method]

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

S. Typhimurium	Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	1																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	1	0										1													
Aminoglycosides - Streptomycin	32	1	0															1								
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0.5	1	0							1																
Fluoroquinolones - Ciprofloxacin	0.064	1	0				1																			
Penicillins - Ampicillin	8	1	0											1												
Quinolones - Nalidixic acid	16	1	0													1										
Sulfonamides	256	1	1																				1			
Tetracyclines - Tetracycline	8	1	0												1											
Trimethoprim	2	1	0										1													
Cephalosporins - Ceftazidime	2	1	0									1														

Table Antimicrobial susceptibility testing of S. Typhimurium in Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - caecum - quantitative data [Dilution method]

S. Typhimurium	Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

Table Antimicrobial susceptibility testing of Other serovars in Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - caecum - quantitative data [Dilution method]

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

Other serovars	Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	4																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	4	0									3	1													
Aminoglycosides - Streptomycin	32	4	1													2	1				1					
Amphenicols - Chloramphenicol	16	4	0													1	3									
Cephalosporins - Cefotaxime	0.5	4	0							2	1		1													
Fluoroquinolones - Ciprofloxacin	0.064	4	1				2		1			1														
Penicillins - Ampicillin	8	4	1											2	1				1							
Quinolones - Nalidixic acid	16	4	1													3			1							
Sulfonamides	256	4	1															1	2					1		
Tetracyclines - Tetracycline	8	4	1											1	2					1						
Trimethoprim	2	4	1											1	2				1							

Other serovars	Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		

Table Antimicrobial susceptibility testing of Other serovars in Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - caecum - quantitative data [Dilution method]

Other serovars	Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - unspecified - Slaughterhouse - Domestic - Surveillance - animal sample - lymph nodes - quantitative data [Dilution method]

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

S. Typhimurium	Pigs - fattening pigs - unspecified - Slaughterhouse - Surveillance																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	10																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	10	0										4	4	2										
Aminoglycosides - Streptomycin	32	10	6												1			2	1		6				
Amphenicols - Chloramphenicol	16	10	1												1	3	5			1					
Cephalosporins - Cefotaxime	0.5	10	0							7	3														
Fluoroquinolones - Ciprofloxacin	0.064	10	1			1			4	4	1														
Penicillins - Ampicillin	8	10	7											3					7						
Quinolones - Nalidixic acid	16	10	0													10									
Sulfonamides	256	10	8															1		1				8	
Tetracyclines - Tetracycline	8	10	6											1	3				1	5					
Trimethoprim	2	10	0										8	2											

S. Typhimurium	Pigs - fattening pigs - unspecified - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - unspecified - Slaughterhouse - Domestic - Surveillance - animal sample - lymph nodes - quantitative data [Dilution method]

S. Typhimurium	Pigs - fattening pigs - unspecified - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. Derby in Pigs - fattening pigs - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - lymph nodes - quantitative data [Dilution method]

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

S. Derby	Pigs - fattening pigs - Slaughterhouse - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	1																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	1	0										1													
Aminoglycosides - Streptomycin	32	1	0															1								
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0.5	1	0								1															
Fluoroquinolones - Ciprofloxacin	0.064	1	0						1																	
Penicillins - Ampicillin	8	1	0										1													
Quinolones - Nalidixic acid	16	1	0													1										
Sulfonamides	256	1	1																					1		
Tetracyclines - Tetracycline	8	1	0												1											
Trimethoprim	2	1	0										1													

S. Derby	Pigs - fattening pigs - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Derby in Pigs - fattening pigs - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - lymph nodes - quantitative data [Dilution method]

S. Derby	Pigs - fattening pigs - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. Agona in Pigs - fattening pigs - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - lymph nodes - quantitative data [Dilution method]

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

S. Agona	Pigs - fattening pigs - Slaughterhouse - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	2																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	2	0									2														
Aminoglycosides - Streptomycin	32	2	0													2										
Amphenicols - Chloramphenicol	16	2	0														2									
Cephalosporins - Cefotaxime	0.5	2	0									2														
Fluoroquinolones - Ciprofloxacin	0.064	2	0				2																			
Penicillins - Ampicillin	8	2	0											2												
Quinolones - Nalidixic acid	16	2	0													2										
Sulfonamides	256	2	0																		2					
Tetracyclines - Tetracycline	8	2	0												2											
Trimethoprim	2	2	0										2													

S. Agona	Pigs - fattening pigs - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Agona in Pigs - fattening pigs - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - lymph nodes - quantitative data [Dilution method]

S. Agona	Pigs - fattening pigs - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of Other serovars in Pigs - fattening pigs - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - lymph nodes - quantitative data [Dilution method]

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

Other serovars	Pigs - fattening pigs - Slaughterhouse - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	13																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	13	0									2	5	5	1											
Aminoglycosides - Streptomycin	32	13	3													4	1	3	2		3					
Amphenicols - Chloramphenicol	16	13	0												2	3	8									
Cephalosporins - Cefotaxime	0.5	13	0							5	7	1														
Fluoroquinolones - Ciprofloxacin	0.064	13	0				2		9	2																
Penicillins - Ampicillin	8	13	3										3	7					3							
Quinolones - Nalidixic acid	16	13	0													12	1									
Sulfonamides	256	13	7															1	3	2				7		
Tetracyclines - Tetracycline	8	13	3											8	2					3						
Trimethoprim	2	13	3										10						3							

Other serovars	Pigs - fattening pigs - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	13	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of Other serovars in Pigs - fattening pigs - Slaughterhouse - Domestic - Surveillance - Official sampling - animal sample - lymph nodes - quantitative data [Dilution method]

Other serovars	Pigs - fattening pigs - Slaughterhouse - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	13	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

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

S. Typhimurium	Pigs - fattening pigs - Slaughterhouse - Monitoring																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	5																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	5	0										1	4												
Aminoglycosides - Streptomycin	32	5	5																		5					
Amphenicols - Chloramphenicol	16	12	1										1		2		8			1						
Cephalosporins - Cefotaxime	0.5	5	0							3	2															
Fluoroquinolones - Ciprofloxacin	0.064	5	0						5																	
Penicillins - Ampicillin	8	5	5																5							
Quinolones - Nalidixic acid	16	5	0													5										
Sulfonamides	256	5	5																					5		
Tetracyclines - Tetracycline	8	5	4											1						4						
Trimethoprim	2	5	3										1		1				2		1					

S. Typhimurium	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

S. Typhimurium	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. 1,4,12:i:- in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

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

S. 1,4,12:i:-	Pigs - fattening pigs - Slaughterhouse - Monitoring																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	2																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	2	0										1	1												
Aminoglycosides - Streptomycin	32	2	2																		2					
Amphenicols - Chloramphenicol	16	2	0														2									
Cephalosporins - Cefotaxime	0.5	2	0							2																
Fluoroquinolones - Ciprofloxacin	0.064	2	1							1	1															
Penicillins - Ampicillin	8	2	2																2							
Quinolones - Nalidixic acid	16	2	0													2										
Sulfonamides	256	2	2																					2		
Tetracyclines - Tetracycline	8	2	1												1					1						
Trimethoprim	2	2	0										1	1												

S. 1,4,12:i:-	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. 1,4,12:i:- in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

S. 1,4,12:i:-	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. Agona in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

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

S. Agona	Pigs - fattening pigs - Slaughterhouse - Monitoring																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	2																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	2	0									1			1											
Aminoglycosides - Streptomycin	32	2	0													1			1							
Amphenicols - Chloramphenicol	16	2	0														2									
Cephalosporins - Cefotaxime	0.5	2	0							1	1															
Fluoroquinolones - Ciprofloxacin	0.064	2	0				1		1																	
Penicillins - Ampicillin	8	2	0											2												
Quinolones - Nalidixic acid	16	2	0													2										
Sulfonamides	256	2	0																1		1					
Tetracyclines - Tetracycline	8	2	0												2											
Trimethoprim	2	2	0										2													

S. Agona	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Agona in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

S. Agona	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	2	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of S. Derby in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

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

S. Derby	Pigs - fattening pigs - Slaughterhouse - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	5																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	5	0										3	2											
Aminoglycosides - Streptomycin	32	5	0												1			1	3							
Amphenicols - Chloramphenicol	16	5	0														5								
Cephalosporins - Cefotaxime	0.5	5	0								5														
Fluoroquinolones - Ciprofloxacin	0.064	5	0				1		4																
Penicillins - Ampicillin	8	7	0										5	2											
Quinolones - Nalidixic acid	16	5	0													4		1							
Sulfonamides	256	5	2																1		2			2	
Tetracyclines - Tetracycline	8	5	0												4	1									
Trimethoprim	2	5	0										4		1										

S. Derby	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of S. Derby in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

S. Derby	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

Table Antimicrobial susceptibility testing of Other serovars in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

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

Other serovars	Pigs - fattening pigs - Slaughterhouse - Monitoring																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	1																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	1	0											1												
Aminoglycosides - Streptomycin	32	1	0																1							
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0.5	1	0								1															
Fluoroquinolones - Ciprofloxacin	0.064	1	0						1																	
Penicillins - Ampicillin	8	1	0										1													
Quinolones - Nalidixic acid	16	1	0													1										
Sulfonamides	256	1	1																					1		
Tetracyclines - Tetracycline	8	1	0												1											
Trimethoprim	2	1	0										1													

Other serovars	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		

Table Antimicrobial susceptibility testing of Other serovars in Pigs - fattening pigs - Slaughterhouse - Domestic - Monitoring - Objective sampling - Official sampling - food sample - carcase swabs - quantitative data [Dilution method]

Other serovars	Pigs - fattening pigs - Slaughterhouse - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
	Ceftazidime		2	
Fluoroquinolones	Ciprofloxacin		0.064	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
	Ceftazidime		2	
Fluoroquinolones	Ciprofloxacin		0.064	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
	Ceftazidime		2	
Fluoroquinolones	Ciprofloxacin		0.064	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

2.2.2 Campylobacter in foodstuffs

A. Thermophilic Campylobacter in Broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

Surveillance program for Campylobacter spp in broiler flocks of Gallus gallus includes flocks originating from the Republic of Croatia of which are meat and products thereof intended for public consumption

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling is carried out in a way that:
- in slaughterhouses whose annual capacity is 1,000 tons and more samples are collected three times a week;
- in slaughterhouses whose annual capacity is less than 1,000 tons samples are collected twice a month;
- sampling is based on a random selection of sampling days of the week and shipments to be sampled

Type of specimen taken

At slaughterhouse and cutting plant

For the determination of Campylobacter spp in broiler carcasses one whole carcass must be sampled

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

Per shipment for slaughter, one whole carcass sampled immediately after cooling, prior to further processing procedures

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

EN ISO 10272-1; ISO/TS 10272-2

Table Campylobacter in poultry meat

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from broilers (Gallus gallus) - carcase - Slaughterhouse	Laboratory	Census	Official sampling	food sample > neck skin	Domestic	Single	25 g	757	617	143	397
Meat from broilers (Gallus gallus) - carcase - Slaughterhouse - Surveillance	Laboratory	Census	Official sampling	food sample > neck skin	Domestic	Single	10 g	757	386	95	265

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - carcase - Slaughterhouse			77
Meat from broilers (Gallus gallus) - carcase - Slaughterhouse - Surveillance			26

Footnote:

Laboratory for food microbiology, Croatian veterinary institute Zagreb

2.2.3 Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari
Cattle (bovine animals) - calves (under 1 year) - Farm - Monitoring		Objective sampling	Official sampling	animal sample > caecum	Domestic	Flock	468	62		62	
Gallus gallus (fowl) - broilers - Farm - Monitoring		Objective sampling	Official sampling	animal sample > caecum	Domestic	Flock	736	180	86	94	

	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cattle (bovine animals) - calves (under 1 year) - Farm - Monitoring		
Gallus gallus (fowl) - broilers - Farm - Monitoring		

2.2.4 Antimicrobial resistance in Campylobacter isolates

Table Antimicrobial susceptibility testing of Campylobacter in Gallus gallus (fowl)

Campylobacter	C. coli		C. jejuni		Campylobacter spp., unspecified	
Isolates out of a monitoring program (yes/no)	no		no			
Number of isolates available in the laboratory	86		94			
Antimicrobials:	N	n	N	n	N	n
Aminoglycosides - Gentamicin	86	19	94	36		
Fluoroquinolones - Ciprofloxacin	86	7	94	14		
Macrolides - Erythromycin	86	1	94	2		
Tetracyclines - Tetracycline	86	2	94	12		
Resistant to 1 antimicrobial	86	32	94	40		
Resistant to 2 antimicrobials	86	7	94	13		
Resistant to 3 antimicrobials			94	5		

Table Antimicrobial susceptibility testing of C. jejuni in Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Intra EU trade - animal sample - caecum - quantitative data [Dilution method]

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

C. jejuni	Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	62																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	62	0								7	17	36	2											
Aminoglycosides - Streptomycin	4	62	2											33	22	5	1	1							
Fluoroquinolones - Ciprofloxacin	0.5	62	22							23	14	1	2	1	21										
Quinolones - Nalidixic acid	16	62	23												4	27	7	1	3	20					
Tetracyclines - Tetracycline	1	62	14									45	2	1	1			13							

C. jejuni	Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	62	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		
Fluoroquinolones - Ciprofloxacin		
Quinolones - Nalidixic acid		
Tetracyclines - Tetracycline		

Table Antimicrobial susceptibility testing of C. jejuni in Cattle (bovine animals) - calves (under 1 year) - for slaughter - Slaughterhouse - Intra EU trade - animal sample - caecum - quantitative data [Dilution method]

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

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	EFSA	4	
Fluoroquinolones	Ciprofloxacin	EFSA	0.5	
Macrolides	Erythromycin	EFSA	8	
Quinolones	Nalidixic acid	EFSA	16	
Tetracyclines	Tetracycline	EFSA	2	

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		0.5	
Macrolides	Erythromycin		8	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline		2	

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		0.5	
Macrolides	Erythromycin		8	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline		2	

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

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	EFSA	4	
Fluoroquinolones	Ciprofloxacin	EFSA	0.5	
Macrolides	Erythromycin	EFSA	4	
Quinolones	Nalidixic acid	EFSA	16	
Tetracyclines	Tetracycline	EFSA	1	

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		0.5	
Macrolides	Erythromycin		4	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline		1	

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		0.5	
Macrolides	Erythromycin		4	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline		1	

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

2.3.2 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - Retail - Surveillance	MH	Selective sampling	Official sampling	food sample	Unknown	Single	10g	15			

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - Retail - Surveillance	15		0

Table Listeria monocytogenes in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Fish - smoked - Retail - Surveillance [1)]		Selective sampling	Official sampling	food sample	Unknown	Single	10g	30	2		
Bakery products - cakes - containing heat-treated cream - Retail - Monitoring		Selective sampling	Official sampling	food sample	Domestic	Single	10g	283	0		
Dairy products, unspecified - Retail - Monitoring - passive		Selective sampling	Official sampling	food sample	Domestic	Single	10g	445	0		
Ready-to-eat salads - Retail - Monitoring (mixed ready-to-eat food)		Selective sampling	Official sampling	food sample	Domestic	Single	10g	441	0		

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Fish - smoked - Retail - Surveillance [1)]	30		2
Bakery products - cakes - containing heat-treated cream - Retail - Monitoring	283		0
Dairy products, unspecified - Retail - Monitoring - passive	445		0
Ready-to-eat salads - Retail - Monitoring (mixed ready-to-eat food)	441		0

Comments:

[1)] n=5

Table Listeria monocytogenes in other foods

2.3.3 Listeria in animals

Table Listeria in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals) - dairy cows - Farm - Monitoring [1)]		Selective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	201		40	
Cattle (bovine animals) - dairy cows - Farm - Monitoring [2)]		Selective sampling	Official sampling	animal sample > placental swab	Domestic	Animal	132		8	

Comments:

[1)] Samples from abortions

[2)] mples from animals that aborted

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

2.5.2 Mycobacterium in animals

A. Mycobacterium bovis in bovine animals

Status as officially free of bovine tuberculosis during the reporting year

The entire country free

Croatia is not recognised as country officially tuberculosis free according to Directive 64/432/EEC.

Free regions

Croatia has no regions officialy tuberculosis free according to Directive 64/432/EEC.

Additional information

Croatia is in the process of designation of officially tuberculosis free herds according to Directive 64/432/EEC and fulfilling the requirements of point 4, Annex A, Part I of Directive 64/432/EEZ so that most regions in Croatia can obtain officially free status.
First year of implementation of official eradication programme aligned with Directive 64/432/EEC was 2010th. In the end of 2011, overal percentage of about 90% of officially free herds was achieved.
In the end of 2013 percentage of OTF herds was 96,96%.
Since 1st July 2013 Bovine tuberculosis eradication programme is co-financed by European Commission.

Monitoring system

Sampling strategy

All bovine animals older than 6 weeks must be tested once a year in the whole country for OTF status maintenance. Also, goats kept for milk production in mixed herds (cattle and goats) must be tested as well. Premovement testing is mandatory for all bovines older than 6 weeks in the whole country. All animals with positive or incoclusive reaction are retested after 42 days with comparative test. All animals not testing negative on the second test are slaughtered. Also in county where common pasture is practised all animals have to be tested twice a year, before and after the common pasture season. Herds in the process of designating officially free status are tested according to Annex A, Part I, point 1 of Directive 64/432/EEZ. All animals slaughtered after testing positive on tuberculin skin test are sampled at the slaughterhouse according to Annex B, Part 1 of Directive 64/432/EEZ. Also, samples from all animals at regular slaughter showing characteristic patoanatomical changes are taken. Presence of Mycobacterium tuberculosis complex is confirmed by bacteriological test.

Frequency of the sampling

All bovine animals once a year. Bovine animals in county where common pasture is practised have to be tested twice per year.

Sampling at the slaughterhouse
- after slaughter of positive reactors
- all animals showing characteristical patoanatomical changes

Type of specimen taken

Sampling in the slaughterhouse (according to Annex B, Part 1 of Directive 64/432/EEZ)
- abnormal lymph nodes and parenchymatous organs such as lungs, liver, spleen, etc. In the cases where the animal does not present pathological lesions, samples from the retropharyngeal, bronchial, mediastinal, supramammary, mandibular and some mesenteric lymph nodes and liver should be collected for examination and culture.

Methods of sampling (description of sampling techniques)

Animals are tested with tuberculin skin test according to Annex B, point 2 of Directive 64/432/EEZ.
Samples at the slaughterhouse are taken by authorised veterinarian or veterinary inspector. Sampling in case of routine slaughtering is according to patoanatomical changes and as described above. In case of positive reactor sampling, all the animals are sampled, in case od pathoanatomical changes:
abnormal lymph nodes and parenchymatous organs such as lungs, liver, spleen are taken.
In case there is no path.changes samples from the retropharyngeal, bronchial, mediastinal, supramammary, mandibular, mesenteric lymph nodes and liver.

Case definition

Bovine tuberculosis is considered to be confirmed if:
a) Laboratory examination has confirmed agent from M. tuberculosis complex in tissue material from bovine animal
b) Post mortem examination shows typical pathological changes, and agent from M. tuberculosis complex is confirmed by the laboratory examination
c) Post mortem veterinary control at slaughter line found typical pathological changes, and agent from M. tuberculosis complex is confirmed by the laboratory examination.

Mycobacterium tuberculosis complex consists of:
Mycobacterium tuberculosis
Mycobacterium bovis
Mycobacterium capri
Mycobacterium africanum

Diagnostic/analytical methods used

Intradermal testing
- according to Annex B, point 2 of Directive 64/432/EEZ

Sampling in the slaughterhouse
- according to Annex B, Part 1 of Directive 64/432/EEZ

Bacteriological examination
- - according to Annex B, Part 1 of Directive 64/432/EEZ

Vaccination policy

Vaccination is prohibited.

Other preventive measures than vaccination in place

The guidelines of good manufacturing practice are stipulated by the Veterinary Act, the Food Act and the implementing secondary regulations. Continuous education of veterinarians, producers and

animal holders is conducted through the Croatian Veterinary Chamber, the Croatian Chamber of Economy and the Advisory Services of the Ministry of Agriculture. Also, Animal Health Sector participates in education of farmers trough stakeholders associations.
In 2013 Programme to determine the presence of Mycobacterium tuberculosis complex in wild animals was implemented in wild boars. There was no isolation of M.tuberculosis complex. In 2014 Programme of wildlife monitoring will continue.

Control program/mechanisms

The control program/strategies in place

Systematic control and eradication of Bovine tuberculosis in Croatia started in 1946. Due to comprehensive measures, herd disease incidence was in the period 1946 – 1953 rapidly reduced, from 28% to less than 1.4% in 1953. In the next 10 years herd disease incidence decreased to less than 1% of infected herds, and during the period of 1965 – 1990 it was constantly at the level between 0.5 – 1%.
From 2006 – 2009 all bovines older than 6 weeks have been subject of annual round tuberculin screening test in all herds.
Eradication programe aligned with Directive 64/432/EEZ started in 2010th and in the end of 2013 96,96 % of bovine herds were OTF.

Measures which are carried out under the programme for eradication of bovine tuberculosis
- annual routine tuberculin testing of all bovines from the age of 6 weeks in order to retain OTF herd status,
- testing twice a year in area where common pasture is practised, before and after the pasture season
- testing only with comparative intradermal test in one municipality in Sisak moslavina county
- slaughtering of all positive reactors
- bacteriological examination of samples from slaughtered animals
- identification of the agent
- obligatory premovement testing
- compensation for the owners of slaughtered animals
- monitoring of wildlife in order to detect the presence of Mycobacterium tuberculosis complex

Positive reactors
- animals not testing negative on the first intradermal test in herds where M. tuberculosis was previosuly confirmed
- animals not testing negative on the first single intradermal test are retested after a minimum of 42 days with comparative test and all animals not testing negative on the second test are sent to slaughterhouse
- animals with positive reaction on the first comparative test in municipality where only comparative tests are performed

Additional control measures
- registration and approval of holdings, transporters, dealers and assembly centres
- identification and registration of animals
- movement of animals accompanied with health certificate of animal health and origin
- official veterinary inspectiona at the holdings

Recent actions taken to control the zoonoses

Since 2010th official eradication programme is carried out and all bovines older than 6 weeks are regulary tested.

Suggestions to the European Union for the actions to be taken

No sugestions at this stage

Measures in case of the positive findings or single cases

In case of positive result, veterinary inspector should order measures as follows:
1) The herd to be placed under official surveillance
2) Isolation of all positive animals within the herd
3) Prohibition of any movement into or out of the herd, unless authorised by the CA, for the purpose of slaughter without delay
4) Isolation, untill the further testing or sending to slaughter
5) Milk from the infected cows may only be fed to animals on the same farm, after suitable heat treatment
6) Milk from cows from the infected herd (without prejudice to national provisions concerning foodstuffs) can not be delivered to a dairy, except to undergo suitable heat treatment
7) Carcases, half-carcases, quarters, pieces and offal from infected cattle intended for use as feed for animals are treated in such a way to avoid contamination
8) Slurry and manure storage and premises disinfection requirements and procedures are notified to the farmer
9) All positive animals must be slaughtered as soon as possible, but not later than 30 days after the owner was officially notified about the disease and his obligation
10) After the slaughter of all positive animals and prior to restocking, general cleaning and disinfection of all herd quarters, sheds and all equipment should be performed, under official supervision and in accordance with the instructions of the veterinary inspector
11) After the slaughter and disinfection, tuberculin tests must be carried out on the herd concerned to confirm that the disease has been eliminated.

Before restocking of the herd all bovines over six weeks old must pass official tuberculin testing according to Directive 64/432/EEZ

Notification system in place

According to Croatian Ordinance on notification of animal diseases bovine tuberculosis is compulsory notifiable disease.The Ordinance sets out the obligation to notify the occurrence (confirmed case) of bovine tuberculosis and the obligation to notify any suspicion of bovine tuberculosis and lays down the procedures to be followed by the keeper of the animal, the authorised veterinarian, the state veterinary inspector and official laboratories.
The keeper of the animal must immediately and without delay notify an authorised veterinary organisation on suspicion of the disease (clinical signs).
A veterinarian who suspects the disease or finds positive or inconclusive results of tuberculin test must notify the Veterinary and Food Safety Directorate and the state veterinary inspector at a competent branch of the veterinary office by telephone and telefax or electronic means, without delay and not later than within 24 hours. The authorised veterinarian must submit information about the suspicion using the forms set out in Annex III to the Ordinance on the notification of animal diseases.

Results of the investigation

In 2013 464 439 animals (100,2%) and 33 994 herds (95,2%) were tested with intradermal tuberculin test. There were 103 positive reactors (0,022%) in 53 herds (0,14%). Bovine tuberculosis was confirmed in 11

animals (0,002%) and 6 herds (0,016%). In all animals Mycobaterium caprae was isolated.
3 out of 6 confirmed herds were fattening herds assembled with imported animals.

Wildlife monitoring in 2013
110 wild boars were sampled in Sisak Moslavina and Zagrebačka county:
- 73 negative
- 30 Mycobacterium sp.
- 2 Mycobacterium celatum
- 2 Mycobacterium fortuitum
- 1 Mycobacterium avium
- 1 Mycobacterium vaccae
- 1 Mycobacterium intermedium

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

Prevalence of bovine tuberculosis in Croatia is decreasing which can be demonstrated with number of positive herds and positive animals in the period 2010-2013.

Positive reactors and positive herds 2010 - 2013
2010
animals 308 (0,066%)
herds 124 (0,303%)

2011
animals 330 (0,066%)
herds 175 (0,436%)

2012
animals 197 (0,040%)
herds 107 (0,283%)

2013
animals 103 (0,022%)
herds 53 (0,148%)

Confirmed infection 2010-2013:

2010
M.caprae 60
M. bovis 33
M.tuberculosis 1

2011
M.caprae 17
M.bovis 12

2012
M. caprae 5

2013
M.caprae 11

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

Since the prevalence of BTB is decreasing and in 2013 Bovine TB was confirmed in only 6 herds, public health impact can be considered as low.

B. Mycobacterium bovis in farmed deer

Monitoring system

Sampling strategy

According to Order on measures to protect animals from infectious and parasitic diseases and the financing thereof in 2013, in wild game cutting and processing plants, in case of pathoanatomical changes indicative of tuberculosis, an veterinary inspector or an authorised veterinarian must collect the changed lymph nodes and the changed parenchymal organs (spleen, lungs, liver) and send them to an official laboratory to confirm or rule out tuberculosis, and must report the suspicion of the disease in accordance with special regulation.

Frequency of the sampling

Sampling of wild animals will be in cutting and processing plants in case of pathoanatomical changes.

Type of specimen taken

Changed lymph nodes and the changed parenchymal organs (spleen, lungs, liver).

Methods of sampling (description of sampling techniques)

Veterinary inspector or an authorised veterinarian in wild game cutting and processing plants, during post mortem check will take the samples in case of suspicion for tuberculosis.

Case definition

In case of isolation and identification of bacteria from Mycobacterium tuberculosis complex, tuberculosis is considered to be confirmed.

Diagnostic/analytical methods used

Bacteriological examination of sampled organs.

Vaccination policy

Not aplicable.

Other preventive measures than vaccination in place

Movement control.

Control program/mechanisms

The control program/strategies in place

Control program/strategy consists of post mortem check at wild game cutting and processing plants and sampling in case of suspicion.

Recent actions taken to control the zoonoses

In 2014 Program to detect the presence of Mycobacterium tuberculosis complex in wild animals shall be implemented.

Suggestions to the European Union for the actions to be taken

No suggestionas at this stage.

Measures in case of the positive findings or single cases

In case of positive result, veterinary inspector should order measures as follows:
1) The herd to be placed under official surveillance
2) Isolation of all positive animals within the herd
3) Prohibition of any movement into or out of the herd, unless authorised by the CA, for the purpose of slaughter without delay

4) Isolation, untill the further testing or sending to slaughter
5) Carcases, half-carcases, quarters, pieces and offal from infected cattle intended for use as feed for animals are treated in such a way to avoid contamination
6) Slurry and manure storage and premises disinfection requirements and procedures are notified to the farmer
7) All positive animals must be slaughtered as soon as possible, but not later than 30 days after the owner was officially notified about the disease and his obligation
8) After the slaughter of all positive animals and prior to restocking, general cleaning and disinfection of all herd quarters, sheds and all equipment should be performed, under official supervision and in accordance with the instructions of the veterinary inspector
9) After the slaughter and disinfection, tuberculin tests must be carried out on the herd concerned to confirm that the disease has been eliminated.

Notification system in place

According to Croatian Ordinance on notification of animal diseases tuberculosis is compulsory notifiable disease.The Ordinance sets out the obligation to notify the occurrence (confirmed case) of tuberculosis and the obligation to notify any suspicion of tuberculosis and lays down the procedures to be followed by the keeper of the animal, the authorised veterinarian, the state veterinary inspector and official laboratories.
The keeper of the animal must immediately and without delay notify an authorised veterinary organisation on suspicion of the disease (clinical signs).
A veterinarian who suspects the disease or finds positive or inconclusive results of tuberculin test must notify the Veterinary and Food Safety Directorate and the state veterinary inspector at a competent branch of the veterinary office by telephone and telefax or electronic means, without delay and not later than within 24 hours. The authorised veterinarian must submit information about the suspicion using the forms set out in Annex III to the Ordinance on the notification of animal diseases.

Results of the investigation

All bacteriological test and molecular test were negative.

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

According to Task Fore recomendation, sampling of wild population was conducted in 2013. In total 110 wild boar were sampled and no presence of Mycobacterium tuberculosis complex were detected. Furtherome, in 2014, it is envisaged to sample roe deer in order to detect possible source of pathogen in wildlife. Most of conffiremd cases is in cattle, and mainly from fattening herds imported from EU member state (Romania).

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

No evidence of finding tuberculosis agents in foodstuff as source of infection in humans.

Table Tuberculosis in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Analytical Method	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis
Pigs [1)]	NRL	Suspect sampling	Official sampling	animal sample > lymph nodes	Domestic	Microbiological tests	Animal	26	1	0	0
Cats - pet animals - Unknown - Unspecified	NRL	Suspect sampling	Not applicable	animal sample	Domestic	Microbiological tests	Animal	2	0	0	0
Poultry, unspecified	NRL	Suspect sampling	Not applicable	animal sample	Domestic	Microbiological tests	Animal	1	1	0	0
Wild boars - wild - Hunting - Surveillance (Sisak moslavina county and Zagrebačka county - lymph nodes from hunted wild boars) [2)]	NRL	Selective sampling	Official sampling	animal sample > lymph nodes	Domestic	Microbiological tests	Animal	110	37	0	0

	Mycobacterium spp., unspecified
Pigs [1)]	1
Cats - pet animals - Unknown - Unspecified	0
Poultry, unspecified	1
Wild boars - wild - Hunting - Surveillance (Sisak moslavina county and Zagrebačka county - lymph nodes from hunted wild boars) [2)]	37

Comments:

[1)] M. hominissuis

[2)] Mycobacterium spp 30, M.celatum 2, M.fortuitum 2, M. avium 1, M.vaccae 1, M.Intermedium 1

Table Tuberculosis in other animals

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Bjelovarsko-bilogorska županija	4134	4134	3950	6	6	1	16.67	95.55	.15	.15
Brodsko-posavska županija	1154	1154	1088	0	0	0	N.A.	94.28	0	0
Dubrovačko-neretvanska županija	261	261	133	0	0	0	N.A.	50.96	0	0
Grad Zagreb	579	579	574	0	0	0	N.A.	99.14	0	0
Istarska županija	1000	1000	983	0	0	0	N.A.	98.3	0	0
Karlovačka županija	2248	2248	2166	0	0	0	N.A.	96.35	0	0
Koprivničko-križevačka županija	4224	4224	4136	0	0	0	N.A.	97.92	0	0
Krapinsko-zagorska županija	3079	3079	3164	1	1	0	0	102.76	.03	.03
Ličko-senjska županija	1818	1818	1606	10	10	0	0	88.34	.62	.62
Međimurska županija	706	706	666	1	1	0	0	94.33	.15	.15
Osječko-baranjska županija	1753	1753	1707	2	2	0	0	97.38	.12	.12
Požeško-slavonska županija	772	772	750	2	2	0	0	97.15	.27	.27
Primorsko-goranska županija	312	312	295	1	1	0	0	94.55	.34	.34

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

Sisačko-moslavačka županija	2655	2655	2606	24	18	0	0	98.15	.92	.69
Splitsko-dalmatinska županija	1535	1535	1161	0	0	0	N.A.	75.64	0	0
Varaždinska županija	1404	1404	1416	0	0	0	N.A.	100.85	0	0
Virovitičko-podravska županija	1007	1007	878	1	1	0	0	87.19	.11	.11
Vukovarsko-srijemska županija	1505	1505	1443	2	2	0	0	95.88	.14	.14
Zadarska županija	422	422	369	0	0	0	N.A.	87.44	0	0
Zagrebačka županija	4336	4336	4233	3	3	0	0	97.62	.07	.07
Šibensko-kninska županija	803	803	670	0	0	0	N.A.	83.44	0	0
Total : [1)]	35707	35707	33994	53	47	1	1.89	95.2	.16	.14

Comments:

[1)] N.A.

Table Tuberculosis in farmed deer

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

Region	Total number of existing farmed deer		Free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological examinations	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Hrvatska [1)]	340		0	0	0	0	no routine test	0	0	0	0
Total : [2)]	340	0	0	0	0	0	N.A.	0	0	0	0

Comments:

[1)] Number of animals is not available

[2)] N.A.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Bjelovarsko-bilogorska županija	70026	70026	64750	64750	21	21	33	92.47	.03
Brodsko-posavska županija	14664	14664	15009	15009	0	0	0	102.35	0
Dubrovačko-neretvanska županija	1856	1856	631	631	0	0	0	34	0
Grad Zagreb	3825	3825	4595	4595	0	0	0	120.13	0
Istarska županija	8380	8380	8968	8968	0	0	0	107.02	0
Karlovačka županija	16331	16331	15134	15134	0	0	0	92.67	0
Koprivničko-križevačka županija	69163	69163	70494	70494	0	0	0	101.92	0
Krapinsko-zagorska županija	11828	11828	12764	12764	2	2	2	107.91	.02
Ličko-senjska županija	12017	12017	7577	7577	18	18	18	63.05	.24
Međimurska županija	11184	11184	11746	11746	2	2	2	105.03	.02
Osječko-baranjska županija	79438	79438	90747	90747	3	3	3	114.24	0
Požeško-slavonska županija	12621	12621	13918	13918	2	2	2	110.28	.01
Primorsko-goranska županija	1486	1486	1585	1585	2	2	2	106.66	.13

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

Sisačko-moslavačka županija	32404	32404	44790	44790	45	45	45	138.22	.1
Splitsko-dalmatinska županija	6304	6304	5943	5943	0	0	0	94.27	0
Varaždinska županija	9572	9572	11099	11099	0	0	0	115.95	0
Virovitičko-podravska županija	16451	16451	14132	14132	1	1	1	85.9	.01
Vukovarsko-srijemska županija	34543	34543	30488	30488	3	3	3	88.26	.01
Zadarska županija	4640	4640	4029	4029	0	0	0	86.83	0
Zagrebačka županija	41161	41161	32276	32276	4	4	4	78.41	.01
Šibensko-kninska županija	4286	4286	3764	3764	0	0	0	87.82	0
Total : [1)]	462180	462180	464439	464439	103	103	115	100.49	.02

Comments:

[1)] N.A.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Bjelovarsko-bilogorska županija	4134	70026	0	0	0	0	6	21	2	44	0	0	4068	68970
Brodsko-posavska županija	1154	14664	0	0	0	0	0	0	0	0	0	0	1122	14258
Dubrovačko-neretvanska županija	261	1856	0	0	0	0	0	0	0	0	0	0	167	1198
Grad Zagreb	579	3825	0	0	0	0	0	0	0	0	0	0	560	3700
Istarska županija	1000	8380	0	0	0	0	0	0	0	0	0	0	958	8032
Karlovačka županija	2248	16331	0	0	0	0	0	0	2	13	0	0	2204	16012
Koprivničko-križevačka županija	4224	69163	0	0	0	0	0	0	0	0	0	0	4184	68523
Krapinsko-zagorska županija	3079	11828	0	0	0	0	1	2	0	0	0	0	3042	11477
Ličko-senjska županija	1818	12017	0	0	0	0	10	18	9	154	0	0	1766	11674
Međimurska županija	706	11184	0	0	0	0	1	2	0	0	0	0	701	11105
Osječko-baranjska županija	1753	79438	0	0	0	0	2	3	0	0	0	0	1708	77413
Požeško-slavonska županija	772	12621	0	0	0	0	2	2	0	0	0	0	759	12409
Primorsko-goranska županija	312	1486	0	0	0	0	1	2	0	0	0	0	302	1439

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

Sisačko-moslavačka županija	2655	32404	0	0	6	9	18	36	1	4	0	0	2568	31343
Splitsko-dalmatinska županija	1535	6304	0	0	0	0	0	0	0	0	0	0	1320	5444
Varaždinska županija	1404	9572	0	0	0	0	0	0	0	0	0	0	1386	9450
Virovitičko-podravska županija	1007	16451	0	0	0	0	1	1	0	0	0	0	972	15880
Vukovarsko-srijemska županija	1505	34543	0	0	0	0	2	3	0	0	0	0	1479	33948
Zadarska županija	422	4640	0	0	0	0	0	0	0	0	0	0	362	3981
Zagrebačka županija	4336	41161	0	0	0	0	3	4	0	0	0	0	4280	40630
Šibensko-kninska županija	803	4286	0	0	0	0	0	0	0	0	0	0	647	3455
Total : [1)]	35707	462180	0	0	6	9	47	94	14	215	0	0	34555	450341

Comments:

[1)] N.A.

2.6 BRUCELLOSIS

2.6.1 General evaluation of the national situation

2.6.2 Brucella in animals

A. Brucella abortus in bovine animals

Status as officially free of bovine brucellosis during the reporting year

The entire country free

Croatia is not recognised as country officialy brucelosis free according to Directive 64/432/EEC.

Free regions

Croatia has no regions officially brucelosis free according to Directive 64/432/EEC.

Additional information

Croatia is in proces of designation of officialy brucelosis free herds according to Directive 64/432/EEC and fulfilling the requirements of Annex A, part II, point 7 so that most regions can obtain officially free status. Last case of bovine brucellosis in Croatia (B. abortus) was confirmed in 1965.

Measures of active control and early detecting of bovine brucellosis have been sistematically implemented during the last two decades. Mandatory reporting and laboratory investigation of each abortion in cattle and premovement testing of bovine animals older than 12 months were constantly the part of the control measures.
Testing scheme of control of the herds has changed several times, consisting of combination of bulk milk sampling and individual blood testing, especially in holdings with more than 10 dairy cows.

In period 2007 – 2009, following measures were prescribed every year:
a) Mandatory reporting of all abortions and laboratory investigation.
b) Blood sampling of 20 % cows in all herds with more than 10 cattle. Also, blood samples of all heifers, before first lactation, had to be taken in such herds.
c) Premovement testing for all breeding cattle older than 12 months.
d) Blood sampling of all breeding bulls, twice per year.

Since 2011th control measures fully aligned with Directive 64/432/EEC have started and it is the first year of the official eradication programme.

Number of reported abortions (laboratory examination) during period 2008-2013 was:
Year 2013 - 1332 tests
Year 2012 - 1174 tests
Year 2011 - 1399 tests
Year 2010-1467 tests
Year 2009-1112 tests
Year 2008-751 tests.

Overall percentage of OBF herds in April 2014 was 92%.

Monitoring system

Sampling strategy

In 2013th all breeding animals older than 12 months are tested once in order to retain OBF status. Premovement testing of all breeding animals older than 12 months is mandatory in the whole country. Also, it is mandatory to report each case of abortus in bovine animals which are further laboratory investigated.

Frequency of the sampling

All breeding animals older than 12 months - Rose Bengal Test, once a year.
Each reported abortion case is further laboratory investigated.
Premovement testing of all breeding animals older than 12 months - Rose Bengal Test.

Type of specimen taken

Blood and for isolation of Brucella abortus uterine discharges, aborted foetuses, udder secretions or selected tissues, such as lymph nodes and male and female reproductive organs, according to Annex C of Directive 64/432/EEC.

Methods of sampling (description of sampling techniques)

Sampling is performed according to Annex C of Directive 64/432/EEC.

Case definition

In case of positive Rose Bengal Test, additional serological tests are needed.
Croatian Veteinary Institute Zagreb uses four tests in order to confirm RBT positive results: another RBT, CFT, cELISA and iELISA. If in additional tests there are no positive results, or again only RBT is positive, final result is considered as negative. But if there are two or more positive tests at confirmation level, there are 3 options for further interpretation:

a. In case of any clinical signs; in case that blood sample it taken as the result of abortion; in case that movement or testing history of the herd of the origin is not clear -> animal is considered as positive and sent to slaughter and further bacteriological examination

b. In case that there is no clinical signs and if history of the herd is clear (movements, testing), herd will be under restriction and positive animals will be isolated. Aditional blood sample should be taken or brucellin skin test should be applied. If at second blood test done after 35-45 days there are two or more positive tests, animal is considered as a positive one and it will be sent to slaughter. Also, if animal is positive on brucelin skin test it will be sent to slaughter.

In all positive cases, samples at slaughterline must be taken and sent to Croatian Veterinary Institute for further laboratory examination and confirmation of Brucela abortus.

According to the Ordinance on measures for control and eradication of bovine brucellosis (Official Gazette, 112/13), bovine brucelosis is considered to be confimed if laboratory or molecular investigation confirms presence of Brucela abortus in animals slaughtered due to suspicion after serological or skin test or after an laboratory investigation of aborted material. In case of positive bulk milk sample, individual blood sample must be taken from all bovines whose milk was included into bulk sample.

Diagnostic/analytical methods used

The Laboratory for Bacterial Zoonoses and Molecular Diagnostics of Bacterial Diseases of the Croatian Veterinary Institute in Zagreb is the official and national reference laboratory for the diagnosis of bovine

brucellosis.
In accordance to the Annex C of Directive 64/432/EEC, blood tests for bovine brucellosis are:
a) Rose Bengal Test (RBT) – as the screening method
b) Complement Fixation Tet (CFT) – as confirmation method
c) Competitive ELISA (cELISA) – for confirmation purposes
d) Indirect ELISA (iELISA) – for confirmation purposes
Bulk milk samples are tested using the Milk ELISA Test.
Confirmation : isolation od Brucella abortus.

Vaccination policy

Vaccination is prohibited.

Other preventive measures than vaccination in place

The guidelines of good manufacturing practice are stipulated by the Veterinary Act, the Food Act and the implementing secondary regulations. Continuous education of veterinarians, producers and animal holders is conducted through the Croatian Veterinary Chamber, the Croatian Chamber of Economy and the Advisory Services of the Ministry of Agriculture. Also, Animal Health Sector participates in education of farmers trough stakeholders associations and is raising awareness about importance of reporting abortuses.

Control program/mechanisms

The control program/strategies in place

In 2013th all breeding animals older than 12 months are tested once with RBT in order to retain OBF status. Also, all breeding animals in remaining non OBF herds are tested in order to gain OBF status. Premovement testing of all breeding animals older than 12 months is mandatory in the whole country. Also, it is mandatory to report each case of abortus in bovine animals which are further laboratory investigated.

According to Ordinance on measures for control and eradication of bovine brucellosis (Official Gazette, 112/2013), “test and slaughter” strategy is prescribed. Interpretation in different cases of positive results is set, including epidemiological data, movement and testing history of the herd and other relevant details as it is described in case definition explanation.

Programme was carried out in the whole territory of the country.

Additional control measures
- registration and aproval of holdings, transporters, dealers and assembly centres
- identificationa nd registration of animals
- movement of animals acompanied with health certificate of animal health and origin
- official veterinary inspection at the holdings

In case of any suspicion case in the herd, as well as in case of any positive blood test result, holding is immediately restricted by the decision of veterinary inspector and rules prescribed by the Ordinance on measures for control and eradication of bovine brucellosis are applied. That means that no cattle may leave the herd concerned, unless by the autorisation of veterinary inspector for the purpose of slaguther without delay, untill the new decision of competent state veterinary inspector.

Recent actions taken to control the zoonoses

Official eradication programme including all breeding animals older than 12 months, aligned with Directive 462/64/EEZ, is in place since 2011.

Measures in case of the positive findings or single cases

In case where brucellosis is suspected of confirmed , the holding is restricted under EU and national legislation and an animal may not be moved into or out of a restricted holding except in accordance with the movement permit approved by the CA.
Measures in case of suspcision or officially confirmed bovine brucellosis are presribed by the Ordinance on measures for control and eradication of bovine brucellosis, which is aligned with the criteria for accelerated eradication of bovine brucellosis, prescribed by the Directive 78/52/EEC.

Notification system in place

The Ordinance on the notification of animal diseases (Official Gazette 62/11, 114/11) sets out the obligation to notify the occurrence (confirmed case) of bovine brucellosis and the obligation to notify any suspicion of bovine brucellosis and lays down the procedures to be followed by the keeper of the animal, the authorised veterinarian, the veterinary inspector and official laboratories.
The keeper of the animal must immediately and without delay notify an authorised veterinary organisation suspicion on disease (clinical signs).
A veterinarian who suspects the disease must notify the Veterinary and Food Safety Directorate and the state veterinary inspector at a competent branch of the veterinary office thereof by telephone and telefax or by electronic means, without delay and not later than within 24 hours. The authorised veterinarian must submit information about the suspicion using the forms set out in Annex III to the Ordinance on the notification of animal diseases.

Results of the investigation

In 2013th 216 579 individual blood samples were tested with Rose Bengal Test, and one animal was slaughtered due to positive results in aditional serological tests (positive RBT, CFT and cELISA). Samples from slaughterhouse were further laboratory investigated and Brucella sp. was not isolated. Also, number of reported abortions which were further laboratory examinated in 2013 was 1332 and Brucella sp. was not isolated.

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

Bovine brucelosis was not confirmed in Croata since 1965.

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

Since the last case of Bovine brucelosis in Croatia was confirmed in 1965 public health impact is negligible.

B. Brucella melitensis in goats

Status as officially free of caprine brucellosis during the reporting year

The entire country free

Croatia is not recognised as country officialy brucelosis free according to Directive 91/68/EEC.

Free regions

Croatia has no regions officially brucelosis free according to Directive 64/432/EEC.

Additional information

Croatia is in the process of designation of officially brucelosis free herds. Official eradication programme for caprine and ovine brucelosis and control mesures fully aligned with Directive 91/68/EEC started in 2012. Individual blood test was performed in all caprine and ovine herds from wich milk and milk products are placed on the market for public consumption (about 12% of all sheep and goat population in the country).
In 2013th tests were performed on rams and male goats used for production on semen for artificial insemination or for natural mating (once a year)., not later than prior to their introduction into new breeding and/or the start of use for artificial insemination or natural mating. In spring 2013, another individual blood test in all mixed and dairy herds has been performed. All herds wich fulfilled conditions (tested twice in 2012 and 2013) are asigned with officialy-free status (total number of 634 herds and around 71169 animals). There was no positive cases in dairy or mixed herds but there was one positive heard in Lika-Senj county in extensive, non dairy production, which has been destroyed/eradicated. That was the first outbreak of B. melitensis in Croatia, after 2010.

Monitoring system

Sampling strategy

The Programme in 2013 coverd all ovine and caprine animals over six months in dairy and mixed herds. In autumn 2014 whole sheep and goat population will be tested (individual blood tests) and also in the spring 2015.

Frequency of the sampling

Animals in dairy and mixed herds were tested once in 2013.
All animals in S&G flocks in the country will be tested once in 2014 and 2015, taking in consideration the necessary interval between tests.

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Individual blood samples are taken by authorised veterinary organisations.
The method used for taking individual blood samples is aseptic venipuncture. Also, before destroying of positive animal, samples must be taken and sent to laboratory for further bacteriological examination and identification of the bacteria.

Case definition

Animals are tested with Rose Bengal Test (RBT). In case of positive RBT, such samples have to be sent to Central Laboratory of Croatian Veterinary Institute and tested with Complement Fixation Test (CFT). If CFT is positive, such animals are considered as positive and should be destroyed.
Also, in case that >5% of tested animals within the herd shows positive RBT result, all tested animals

must be retested by the CFT method.

Definition of confirmed case:
In case of all positive CFT tests, before destroying of positive animal samples must be taken and sent to laboratory to further bacteriological examination and identification of the bacteria.

Diagnostic/analytical methods used

Serological methods:
Rose Bengal test - screening
Complement fixation test - confirmatory test

Bacteriological examination
- culture and identification of the agent

Vaccination policy

Vaccination is not performed.

Control program/mechanisms

The control program/strategies in place

The Eradication Programme for Ovine and Caprine Brucellosis (B. melitensis) is based on the "test and destroy" strategy.

In 2012 and 2013 all sheeps and goats over six months in dairy and mixed herds, from which milk and milk products are placed on the market for public consumption, had to be tested twice, at an interval of at least six months, with negative results. All the herds which were tested negative twice and fullfiled conditions of Directive 91/68/EEC were asigned with officially brucelosis free status.

In the 2014 and 2015, granting and maintaining the status of herd officially free of ovine and caprine brucellosis (B. melitensis) will continue.
First test will be conducted in autumn 2014 (including whole sheep and goat population in Croatia).
Second test will be in spring 2015, at least 6 months after the first.

Recent actions taken to control the zoonoses

Official programme including animals, aligned with Directive //EEZ, is in place since 2012 and will continue until most of the regions and whole coutry fulfills conditions to be declared as official brucelosis (B.melitensis) free.

Measures in case of the positive findings or single cases

If the disease is officially confirmed on a holding, the competent veterinary inspector shall order that the following measures:
(a) all movement out of or into the infected herd, except when animals from the infected herd are sent for urgent slaughter, must be prohibited;
(b) animals in which the presence of brucellosis (B. melitensis) has been officially confirmed must be marked and their eartag numbers listed, and they must be separated and isolated until they are killed or sent for killing; all positive animals must be destroyed as soon as possible, but not later than 30 days after the owner has been informed about the positive results
(c) the remaining animal species which are susceptible to brucellosis must without delay be isolated and subjected to a test for brucellosis (B. melitensis);
(d) infected animals must be killed and safely disposed of;
(e) milk from infected animals on the holding must be kept at a special place, isolated from the milk of uninfected animals;

(f) milk from infected animals may only be used on the holding of origin after undergoing suitable heat treatment, exclusively for producing cheese or for the purpose of being used as a feedingstuff;
(g) milk from uninfected animals on an infected holding may be placed on the market only after undergoing suitable heat treatment;
(h) aborted foetuses, lochia, placentae and dead animals must be safely disposed of as soon as possible;
(i) the infected building and yard, as well as objects which have come into contact with the infected animal, must be disinfected, before being used again;
(j) bedding, straw, litter and upper layers of soil used by the infected animal must be disinfected and safely disposed of (buried);
(k) manure from quarters used by the infected animals must be stored in a place inaccessible to farm animals, treated with a suitable and approved disinfectant and stored for at least three weeks. Use of disinfectant is not required if the manure is completely covered. Liquid manure (slurry) must be disinfected. The manure must not be used on garden produce intended for the market;
(l) an epidemiological investigation must be conducted to collect at least the following information: the number of animals in the herd, animal movements from/to the holding in the last six months, the time of appearance of the first signs of the disease; likely sources of infection on the infected holding; a list of other holdings containing animals that may have been infected from the same source(s);
(m) two tests separated by an interval of at least three months must be carried out on all animals over six months old and kept on the holding/holdings that are epidemiologically linked to the infected holding. Should brucellosis (B. melitensis) be diagnosed in ovine or caprine animals after they have returned from seasonal pasture which they shared with ovine or caprine animals from other holdings, all ovine and/or caprine animals that have been in contact with those from an infected holding shall be regarded as infected and officially tested in order to rule out the presence of brucellosis (B. melitensis) in the herd.

Notification system in place

The Ordinance on the notification of animal diseases (Official Gazette 62/11, 114/11) sets out the obligation to notify the occurrence (confirmed case) of ovine and caprine brucellosis and the obligation to notify any suspicion of ovine and caprine brucellosis and lays down the procedures to be followed by the keeper of the animal, the authorised veterinarian, the state veterinary inspector and official laboratories. The keeper of the animal must immediately and without delay notify an authorised veterinary organisation suspicion on disease (clinical signs and dead animals).
A veterinarian who suspects the disease or detects a primary or secondary outbreak of the disease must notify the Veterinary Directorate and the state veterinary inspector at a competent branch of the veterinary office thereof by telephone and telefax or electronic means, without delay and no later than within 24 hours. The authorised veterinarian must submit information about the suspicion or confirmed case of ovine and caprine brucellosis using the forms set out in Annex III to the Ordinance on the notification of animal diseases.

Results of the investigation

During testing in 2013th there were no positive cases of B. melitensis in mixed and dairy herds. However, in October 2013 one positive herd has been detected in Lika - Senj County (in extensive, non-dairy production). Herd was destroyed/eradicated. That was the first outbreak of B. melitensis in Croatia, after 2010.

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

Ovine and caprine brucellosis (B. melitensis) in ovine and caprine herds in Croatia occurs sporadically, mainly in the areas of the Republic of Croatia bordering Bosnia and Herzegovina. That means that size of areas with the risk of brucellosis (B. melitensis) is relatively small and restricted. The main risk of spreading disease is recognized in possibility of uncontrolled movement of animals in such areas. Extensive farming of sheep and goats, inadequate feeding, frequent parasitoses and avitamonoses also lead to decreased immunity in animals, and thus to a rapid spread of brucellosis within the herd.

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

Several major epizootics and epidemics of brucellosis caused by B. melitensis are known to have occurred in the Republic of Croatia.

The first one was reported to occur after the World War II, in Istria in 1947 (enzootic in goats), when more than 300 persons were affected by brucellosis caused by B. melitensis. The last case of the disease in people was reported to occur in 1954, and in sheep and goats in 1961.

An epizootic of brucellosis caused by B. melitensis was again recorded in 1991, in Istria, and in the same year the Croatian Veterinary Institute in Zagreb detected positive reactions in 65 persons.

In 2004, an epizootic caused by B. melitensis was found in the Split-Dalmatia County. Brucellosis was clinically confirmed in a man from the environs of Split, who was engaged in production of livestock and purchasing of sheep and goats.

During the surveillance of herds in the period from June to November 2004, tests were carried out on blood samples from 21 891 ovine, caprine and bovine animals from 424 herds in Sinj, Vrlika, Dicmo, Otok, Trilj and Hrvace. Positive reactions were detected in 372 sheep and goats and 4 dogs in 5 herds. During the epizootic, clinical symptoms of brucellosis were detected in 4 persons.

A case of human brucellosis was later diagnosed in the Dubrovnik-Neretva County (Metković), and brucellosis was recorded in several ovine and caprine herds in 2005. Infected ovine and caprine herds and direct contact with infected animals were the sources of brucellosis.

In the last few years, since official eradication programmes started, relevance of brucelosis in caprine and ovine animals, as a posible source of infection for humans is decreasing.

C. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

The entire country free

Croatia is not recognised as country officialy brucelosis free according to Directive 91/68/EEC.

Free regions

Croatia has no regions officially brucelosis free according to Directive 64/432/EEC.

Additional information

Croatia is in the process of designation of officially brucelosis free herds. Official eradication programme for ovine brucelosis and control mesures fully aligned with Directive 91/68/EEC started in 2012. Individual blood test was performed in all caprine and ovine herds from wich milk and milk products are placed on the market for public consumption (about 12% of all sheep and goat population in the country).
In 2013th tests were performed on rams and male goats used for production on semen for artificial insemination or for natural mating (once a year)., not later than prior to their introduction into new breeding and/or the start of use for artificial insemination or natural mating. In spring 2013, another individual blood test in all mixed and dairy herds has been performed. All herds wich fulfilled conditions (tested twice in 2012 and 2013) are asigned with officialy-free status (total number of 634 herds and around 71169 animals). There was no positive cases in dairy or mixed herds but there was one positive heard in Lika-Senj county in extensive, non dairy production, which has been destroyed/eradicated. That was the first outbreak of B. melitensis in Croatia, after 2010.

Monitoring system

Sampling strategy

The Programme in 2013 coverd all ovine and caprine animals over six months in dairy and mixed herds. In autumn 2014 whole sheep and goat population will be tested (individual blood tests) and also in the spring 2015.

Frequency of the sampling

Animals in dairy and mixed herds were tested once in 2013.
All animals in S&G flocks in the country will be tested once in 2014 and 2015, taking in consideration the necessary interval between tests.

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Individual blood samples are taken by authorised veterinary organisations.
The method used for taking individual blood samples is aseptic venipuncture. Also, before destroying of positive animal, samples must be taken and sent to laboratory for further bacteriological examination and identification of the bacteria.

Case definition

Animals are tested with Rose Bengal Test (RBT). In case of positive RBT, such samples have to be sent to Central Laboratory of Croatian Veterinary Institute and tested with Complement Fixation Test (CFT). If

CFT is positive, such animals are considered as positive and should be destroyed.
Also, in case that >5% of tested animals within the herd shows positive RBT result, all tested animals must be retested by the CFT method.

Definition of confirmed case:
In case of all positive CFT tests, before destroying of positive animal samples must be taken and sent to laboratory to further bacteriological examination and identification of the bacteria.

Diagnostic/analytical methods used

Serological methods:
Rose Bengal test - screening
Complement fixation test - confirmatory test

Bacteriological examination
- culture and identification of the agent

Vaccination policy

Vaccination is not performed.

Control program/mechanisms

The control program/strategies in place

The Eradication Programme for Ovine and Caprine Brucellosis (B. melitensis) is based on the "test and destroy" strategy.

In 2012 and 2013 all sheeps and goats over six months in dairy and mixed herds, from which milk and milk products are placed on the market for public consumption, had to be tested twice, at an interval of at least six months, with negative results. All the herds which were tested negative twice and fullfiled conditions of Directive 91/68/EEC were asigned with officially brucelosis free status.

In the 2014 and 2015, granting and maintaining the status of herd officially free of ovine and caprine brucellosis (B. melitensis) will continue.
First test will be conducted in autumn 2014 (including whole sheep and goat population in Croatia).
Second test will be in spring 2015, at least 6 months after the first.

Recent actions taken to control the zoonoses

Official programme including animals, aligned with Directive //EEZ, is in place since 2012 and will continue until most of the regions and whole coutry fulfills conditions to be declared as official brucelosis (B.melitensis) free.

Measures in case of the positive findings or single cases

If the disease is officially confirmed on a holding, the competent veterinary inspector shall order that the following measures:
(a) all movement out of or into the infected herd, except when animals from the infected herd are sent for urgent slaughter, must be prohibited;
(b) animals in which the presence of brucellosis (B. melitensis) has been officially confirmed must be marked and their eartag numbers listed, and they must be separated and isolated until they are killed or sent for killing; all positive animals must be destroyed as soon as possible, but not later than 30 days after the owner has been informed about the positive results
(c) the remaining animal species which are susceptible to brucellosis must without delay be isolated and

subjected to a test for brucellosis (B. melitensis);
(d) infected animals must be killed and safely disposed of;
(e) milk from infected animals on the holding must be kept at a special place, isolated from the milk of uninfected animals;
(f) milk from infected animals may only be used on the holding of origin after undergoing suitable heat treatment, exclusively for producing cheese or for the purpose of being used as a feedingstuff;
(g) milk from uninfected animals on an infected holding may be placed on the market only after undergoing suitable heat treatment;
(h) aborted foetuses, lochia, placentae and dead animals must be safely disposed of as soon as possible;
(i) the infected building and yard, as well as objects which have come into contact with the infected animal, must be disinfected, before being used again;
(j) bedding, straw, litter and upper layers of soil used by the infected animal must be disinfected and safely disposed of (buried);
(k) manure from quarters used by the infected animals must be stored in a place inaccessible to farm animals, treated with a suitable and approved disinfectant and stored for at least three weeks. Use of disinfectant is not required if the manure is completely covered. Liquid manure (slurry) must be disinfected. The manure must not be used on garden produce intended for the market;
(l) an epidemiological investigation must be conducted to collect at least the following information: the number of animals in the herd, animal movements from/to the holding in the last six months, the time of appearance of the first signs of the disease; likely sources of infection on the infected holding; a list of other holdings containing animals that may have been infected from the same source(s);
(m) two tests separated by an interval of at least three months must be carried out on all animals over six months old and kept on the holding/holdings that are epidemiologically linked to the infected holding.
Should brucellosis (B. melitensis) be diagnosed in ovine or caprine animals after they have returned from seasonal pasture which they shared with ovine or caprine animals from other holdings, all ovine and/or caprine animals that have been in contact with those from an infected holding shall be regarded as infected and officially tested in order to rule out the presence of brucellosis (B. melitensis) in the herd.

Notification system in place

The Ordinance on the notification of animal diseases (Official Gazette 62/11, 114/11) sets out the obligation to notify the occurrence (confirmed case) of ovine and caprine brucellosis and the obligation to notify any suspicion of ovine and caprine brucellosis and lays down the procedures to be followed by the keeper of the animal, the authorised veterinarian, the state veterinary inspector and official laboratories.
The keeper of the animal must immediately and without delay notify an authorised veterinary organisation suspicion on disease (clinical signs and dead animals).
A veterinarian who suspects the disease or detects a primary or secondary outbreak of the disease must notify the Veterinary Directorate and the state veterinary inspector at a competent branch of the veterinary office thereof by telephone and telefax or electronic means, without delay and no later than within 24 hours. The authorised veterinarian must submit information about the suspicion or confirmed case of ovine and caprine brucellosis using the forms set out in Annex III to the Ordinance on the notification of animal diseases.

Results of the investigation

During testing in 2013th there were no positive cases of B. melitensis in mixed and dairy herds.
However, in October 2013 one positive herd has been detected in Lika - Senj County (in extensive, non-dairy production). Herd was destroyed/eradicated. That was the first outbreak of B. melitensis in Croatia, after 2010.

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

Ovine and caprine brucellosis (B. melitensis) in ovine and caprine herds in Croatia occurs sporadically, mainly in the areas of the Republic of Croatia bordering Bosnia and Herzegovina. That means that size of areas with the risk of brucellosis (B. melitensis) is relatively small and restricted. The main risk of spreading disease is recognized in possibility of uncontrolled movement of animals in such areas. Extensive farming of sheep and goats, inadequate feeding, frequent parasitoses and avitamonoses also lead to decreased immunity in animals, and thus to a rapid spread of brucellosis within the herd.

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

Several major epizootics and epidemics of brucellosis caused by B. melitensis are known to have occurred in the Republic of Croatia.

The first one was reported to occur after the World War II, in Istria in 1947 (enzootic in goats), when more than 300 persons were affected by brucellosis caused by B. melitensis. The last case of the disease in people was reported to occur in 1954, and in sheep and goats in 1961.

An epizootic of brucellosis caused by B. melitensis was again recorded in 1991, in Istria, and in the same year the Croatian Veterinary Institute in Zagreb detected positive reactions in 65 persons.

In 2004, an epizootic caused by B. melitensis was found in the Split-Dalmatia County. Brucellosis was clinically confirmed in a man from the environs of Split, who was engaged in production of livestock and purchasing of sheep and goats.

During the surveillance of herds in the period from June to November 2004, tests were carried out on blood samples from 21 891 ovine, caprine and bovine animals from 424 herds in Sinj, Vrlika, Dicmo, Otok, Trilj and Hrvace. Positive reactions were detected in 372 sheep and goats and 4 dogs in 5 herds. During the epizootic, clinical symptoms of brucellosis were detected in 4 persons.

A case of human brucellosis was later diagnosed in the Dubrovnik-Neretva County (Metković), and brucellosis was recorded in several ovine and caprine herds in 2005. Infected ovine and caprine herds and direct contact with infected animals were the sources of brucellosis.

In the last few years, since official eradication programmes started, relevance of brucelosis in caprine and ovine animals, as a possible source of infection in humans is decreasing.

Table Brucellosis in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis
Pigs [1)]	NRL	Suspect sampling	Official sampling	animal sample > blood	Domestic	Animal	668	3	0	0	3

	Brucella spp., unspecified
Pigs [1)]	0

Comments:

[1)] Rose Bengal Test 636, ELISA 12, bacteriological tests 20, in 3 animal B.suis bv 2 was isolated

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Bjelovarsko-bilogorska županija	4134	4134	4432	0	0	0	N.A.	107.21	0	0
Brodsko-posavska županija	1154	1154	1273	0	0	0	N.A.	110.31	0	0
Dubrovačko-neretvanska županija	261	261	83	0	0	0	N.A.	31.8	0	0
Grad Zagreb	579	579	633	0	0	0	N.A.	109.33	0	0
Istarska županija	1000	1000	1013	1	1	0	0	101.3	.1	.1
Karlovačka županija	2248	2248	2279	0	0	0	N.A.	101.38	0	0
Koprivničko-križevačka županija	4224	4224	4525	0	0	0	N.A.	107.13	0	0
Krapinsko-zagorska županija	3079	3079	3572	0	0	0	N.A.	116.01	0	0
Ličko-senjska županija	1818	1818	1830	0	0	0	N.A.	100.66	0	0
Međimurska županija	706	706	750	0	0	0	N.A.	106.23	0	0
Osječko-baranjska županija	1753	1753	1724	0	0	0	N.A.	98.35	0	0
Požeško-slavonska županija	772	772	834	0	0	0	N.A.	108.03	0	0
Primorsko-goranska županija	312	312	200	0	0	0	N.A.	64.1	0	0

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

Sisačko-moslavačka županija	2655	2655	3018	0	0	0	N.A.	113.67	0	0
Splitsko-dalmatinska županija	1535	1535	1290	0	0	0	N.A.	84.04	0	0
Varaždinska županija	1404	1404	1527	0	0	0	N.A.	108.76	0	0
Virovitičko-podravska županija	1007	1007	1002	0	0	0	N.A.	99.5	0	0
Vukovarsko-srijemska županija	1505	1505	1622	0	0	0	N.A.	107.77	0	0
Zadarska županija	422	422	385	0	0	0	N.A.	91.23	0	0
Zagrebačka županija	4336	4336	4776	0	0	0	N.A.	110.15	0	0
Šibensko-kninska županija	803	803	711	0	0	0	N.A.	88.54	0	0
Total : [1)]	35707	35707	37479	1	1	0	0	104.96	0	0

Comments:

[1)] N.A.

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Hrvatska	18304	727	735	1	1	1	100	101.1	.14	.14
Total : [1)]	18304	727	735	1	1	1	100	101.1	.14	.14

Comments:

[1)] N.A.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Bjelovarsko-bilogorska županija	70026	34276	34276	34276	0	0	0	100	0
Brodsko-posavska županija	14664	7135	7135	7135	0	0	0	100	0
Dubrovačko-neretvanska županija	1856	528	528	528	0	0	0	100	0
Grad Zagreb	3825	1148	1148	1148	0	0	0	100	0
Istarska županija	8380	5633	5633	5633	1	1	1	100	.02
Karlovačka županija	16331	9658	9658	9658	0	0	0	100	0
Koprivničko-križevačka županija	69163	28421	28421	28421	0	0	0	100	0
Krapinsko-zagorska županija	11828	8027	8027	8027	0	0	0	100	0
Ličko-senjska županija	12017	5694	5694	5694	0	0	0	100	0
Međimurska županija	11184	4699	4699	4699	0	0	0	100	0
Osječko-baranjska županija	79438	28176	28176	28176	0	0	0	100	0
Požeško-slavonska županija	12621	5722	5722	5722	0	0	0	100	0
Primorsko-goranska županija	1486	1399	1399	1399	0	0	0	100	0

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

Sisačko-moslavačka županija	32404	20598	20598	20598	0	0	0	100	0
Splitsko-dalmatinska županija	6304	3299	3299	3299	0	0	0	100	0
Varaždinska županija	9572	5355	5355	5355	0	0	0	100	0
Virovitičko-podravska županija	16451	8670	8670	8670	0	0	0	100	0
Vukovarsko-srijemska županija	34543	12456	12456	12456	0	0	0	100	0
Zadarska županija	4640	2377	2377	2377	0	0	0	100	0
Zagrebačka županija	41161	20787	20787	20787	0	0	0	100	0
Šibensko-kninska županija	4286	2521	2521	2521	0	0	0	100	0
Total : [1)]	462180	216579	216579	216579	1	1	1	100	0

Comments:

[1)] N.A.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Hrvatska	692480	82000	91150	91150	79	79	107	111.16	.09
Total : [1)]	692480	82000	91150	91150	79	79	107	111.16	.09

Comments:

[1)] N.A.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Bjelovarsko-bilogorska županija	4134	34276	0	0	0	0	472	3776	1	9	0	0	3659	30456
Brodsko-posavska županija	1154	7135	0	0	0	0	266	1640	0	0	0	0	888	5495
Dubrovačko-neretvanska županija	261	528	0	0	0	0	217	438	0	0	0	0	44	90
Grad Zagreb	579	1148	0	0	0	0	49	112	0	0	0	0	530	1036
Istarska županija	1000	5633	0	0	0	0	533	3012	0	0	0	0	467	2621
Karlovačka županija	2248	9658	0	0	0	0	159	657	3	15	0	0	2081	8988
Koprivničko-križevačka županija	4224	28421	0	0	0	0	2082	14008	0	0	0	0	2142	14413
Krapinsko-zagorska županija	3079	8027	0	0	0	0	455	1190	0	0	0	0	2624	6837
Ličko-senjska županija	1818	5694	0	0	0	0	352	1102	0	0	0	0	1466	4592
Međimurska županija	706	4699	0	0	0	0	61	406	0	0	0	0	645	4293
Osječko-baranjska županija	1753	28176	0	0	0	0	321	5159	0	0	0	0	1432	23017
Požeško-slavonska županija	772	5722	0	0	0	0	145	1070	0	0	0	0	627	4652
Primorsko-goranska županija	312	1399	0	0	0	0	55	240	0	0	0	0	257	1159

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

Sisačko-moslavačka županija	2655	20598	0	0	0	0	230	1802	0	0	0	0	2425	18796
Splitsko-dalmatinska županija	1535	3299	0	0	0	0	815	1746	0	0	0	0	720	1553
Varaždinska županija	1404	5355	0	0	0	0	127	484	0	0	0	0	1277	4871
Virovitičko-podravska županija	1007	8670	0	0	0	0	369	3176	0	0	0	0	638	5494
Vukovarsko-srijemska županija	1505	12456	0	0	0	0	569	4705	0	0	0	0	936	7751
Zadarska županija	422	2377	0	0	0	0	188	1058	0	0	0	0	234	1319
Zagrebačka županija	4336	20787	0	0	0	0	1156	5540	0	0	0	0	3180	15247
Šibensko-kninska županija	803	2521	0	0	0	0	180	570	0	0	0	0	623	1951
Total : [1)]	35707	216579	0	0	0	0	8801	51891	4	24	0	0	26895	164631

Comments:

[1)] N.A.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Hrvatska [1)]	727	75688	0	0	1	107	100	4412	0	0	0	0	634	71169
Total : [2)]	727	75688	0	0	1	107	100	4412	0	0	0	0	634	71169

Comments:

[1)] sheep

[2)] N.A.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

2.8.2 Trichinella in animals

A. Trichinella in horses

Monitoring system

Sampling strategy

Carcases of horses shall be systematically sampled in slaughterhouses as part of mandatory post-mortem inspection at slaughter, for the purpose of obtaining a suitable sample search. The sample must be taken from each carcass and examined for Trichinella in a laboratory designated by the competent authority.

Frequency of the sampling

Meat of each horses slaughtered in a slaughterhouse , obligatory to inspect for the presence of Trichinella.

Type of specimen taken

Lingual or jaw muscle.

Methods of sampling (description of sampling techniques)

Specimens weighing at least 10 g are taken from the lingual or jaw muscle.

Case definition

Suffering from Trichinella considered horses if the examination of the meat of the slaughtered animals determined the cause of Trichinella spiralis.

Diagnostic/analytical methods used

The methods of detection horses meat infested of Trichinella is done in accordance with COMMISSION REGULATION (EC) No 2075/2005.

Results of the investigation including the origin of the positive animals

Not aplicable

Control program/mechanisms

The control program/strategies in place

Yes

Measures in case of the positive findings or single cases

If confirmed case of Trichinella, measures are being taken in accordance with the Veterinary act (Official Gazette 81/1999 and the Ordinance on measures for the control and eradication of trichinosis (Official Gazette 81/1999).

Notification system in place

Yes

Monitoring system

Sampling strategy

For categories of holdings officially recognised Trichinella-free

Not aplicable

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

Horse meat is not a public health problem.

B. Trichinella in pigs

Number of officially recognised Trichinella-free holdings

Not applicable

Categories of holdings officially recognised Trichinella-free

Not applicable

Officially recognised regions with negligible Trichinella risk

Not applicable

Monitoring system

Sampling strategy

General

Carcases of domestic swine shall be systematically sampled in slaughterhouses as part of mandatory post -mortem inspection at slaughter as well as for personal use, for the purpose of obtaining a suitable sample search. The sample must be taken from each carcass and examined for Trichinella, in a laboratory designated by the competent authority.

For Trichinella free holdings

Not applicable

For categories of holdings officially recognised Trichinella-free

Not applicable

For regions with negligible Trichinella risk

Not applicable

Frequency of the sampling

General

Carcases of domestic swine are systematically sampled in slaughterhouses as part of the post-mortem examination and of pig meat for the presence of nematodes of the genus Trichinella at the time of slaughter for private domestic consumption.

For Trichinella free holdings

Not applicable

For categories of holdings officially recognised Trichinella-free

Not applicable

For regions with negligible Trichinella risk

Not applicable

Type of specimen taken

General

Pillar of the diaphragm

For Trichinella free holdings

Not aplicable

For categories of holdings officially recognised Trichinella-free

Not aplicable

For regions with negligible Trichinella risk

Not aplicable

Methods of sampling (description of sampling techniques)

General

In the case of whole carcases of domestic swine, a specimen weighing at least 1 g is to be taken from a pillar of the diaphragm at the transition to the sinewy part. In the case of breeding sows and boars, a larger sample weighing at least 2 g is to be taken from a pillar of the diaphragm at the transition to the sinewy part. In the absence of diaphragm pillars, a specimen of twice the size 2 g (or 4 g in the case of breeding sows and boars) is to be taken from the rib part or the breastbone part of the diaphragm, or from the raw muscle, tongue or abdominal muscles. For cuts of meat, a sample weighing at least 5 g of striated muscle, containing little fat is to be taken, where possible from close to bones or tendons. A sample of the same size is to be collected from meat that is not intended to be cooked thoroughly or other types of post-slaughter processing. For frozen samples, a sample weighing at least 5 g of striated muscle tissue is to be taken for analysis. The weight of meat specimens relates to a sample of meat that is free of all fat and fascia.

For Trichinella free holdings

Not aplicable

For categories of holdings officially recognised Trichinella-free

Not aplicable

For regions with negligible Trichinella risk

Not aplicable

Case definition

General

Suffering from Trichinella considered pigs in which the life of serological examinations of blood or other examination which determines disease or if the examination of the meat of the slaughtered animals determined the cause of Trichinella spiralis.

For Trichinella free holdings

Not aplicable

For categories of holdings officially recognised Trichinella-free

Not aplicable

For regions with negligible Trichinella risk

Not aplicable

Diagnostic/analytical methods used

General

The methods of detection pig meat infested of Trichinella is done in accordance with COMMISSION REGULATION (EC) No 2075/2005.

For Trichinella free holdings

Not aplicable

For categories of holdings officially recognised Trichinella-free

Not aplicable

For regions with negligible Trichinella risk

Not aplicable

Preventive measures in place

Yes

Control program/mechanisms

The control program/strategies in place

Yes

Summary results of the inspections of Trichinella-free holdings including information on farmer compliance

Not aplicable

Measures in case of the positive findings or single cases

If confirmed case of Trichinella measures are being taken in accordance with the Veterinary act (Official Gazette 81/1999 and the Ordinance on measures for the control and eradication of trichinosis (Official Gazette 81/1999).

The contingency plan in place

Yes

Notification system in place

Yes

Results of the investigation including description of the positive cases and the verification of the Trichinella species

Fattening pigs raised under controlled housing conditions in integrated production system

Not aplicable

Fattening pigs not raised under controlled housing conditions in integrated production system

Not aplicable

Breeding sows and boars

Not aplicable

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

Continuous measurement of mandatory meat pigs reduced the number of confirmed cases of Trichinella, and Trichinella is not a public health problem in Croatia.

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

Not aplicable

Table Trichinella in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified	T. britovi
Pigs - fattening pigs	Allowed veterinarian organization	Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal					
Pigs - fattening pigs - raised under controlled housing conditions - Slaughterhouse - Surveillance	Allowed veterinary organization, control body	Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	1032281	0			
Pigs - fattening pigs - not raised under controlled housing conditions - Slaughterhouse - Surveillance		Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	235887	12	12		
Solipeds, domestic - horses - Slaughterhouse - Surveillance	Allowed veterinary organization, control body	Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	335	0			
Wild boars - farmed - Surveillance		Objective sampling	Official sampling	animal sample > organ/tissue	Unknown	Animal					
Wild boars - wild - Surveillance	Allowed veterinary organization	Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	16084	22		22	
Bears - Surveillance	Allowed veterinary organization	Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	19	2		2	
Foxes - Monitoring	CVI	Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	529	8			8

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

2.9.2 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis
Cattle (bovine animals) - Slaughterhouse - Surveillance [1)]											
Sheep - Slaughterhouse - Surveillance [2)]											
Goats - Slaughterhouse - Surveillance [3)]											
Pigs - Slaughterhouse - Surveillance [4)]											
Solipeds, domestic - horses - Slaughterhouse - Surveillance [5)]											
Reindeers - Slaughterhouse - Surveillance [6)]											
Raccoon dogs [7)]											
Dogs [8)]											
Foxes - Monitoring [9)]		Objective sampling	Official sampling	animal sample > faeces	Domestic	Animal		500	0	0	0

Table Echinococcus in animals

	Echinococcus spp., unspecified
Cattle (bovine animals) - Slaughterhouse - Surveillance [1)]	
Sheep - Slaughterhouse - Surveillance [2)]	
Goats - Slaughterhouse - Surveillance [3)]	
Pigs - Slaughterhouse - Surveillance [4)]	
Solipeds, domestic - horses - Slaughterhouse - Surveillance [5)]	
Reindeers - Slaughterhouse - Surveillance [6)]	
Raccoon dogs [7)]	
Dogs [8)]	
Foxes - Monitoring [9)]	0

Comments:

[1)] NO DATA

[2)] NO DATA

[3)] NO DATA

[4)] NO DATA

[5)] NO DATA

[6)] NO DATA

[7)] NO DATA

Table Echinococcus in animals

Comments:

[8)] NO DATA

[9)] samples have been collected from all regions

2.10 TOXOPLASMOSIS

2.10.1 General evaluation of the national situation

2.10.2 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Analytical Method	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii	Toxoplasma spp., unspecified
Cattle (bovine animals) - Farm - Monitoring [1)]											
Sheep - Farm - Clinical investigations [2)]											
Sheep - Farm - Monitoring [3)]											
Goats - Farm - Clinical investigations [4)]											
Goats - Farm - Monitoring [5)]											
Pigs - Farm - Monitoring [6)]											
Solipeds, domestic - Farm - Monitoring [7)]											
Dogs - Clinical investigations [8)]											
Cats - Clinical investigations [9)]											

Comments:

[1)] NO DATA

[2)] NO DATA

Table Toxoplasma in animals

Comments:

[3)] NO DATA

[4)] NO DATA

[5)] NO DATA

[6)] NO DATA

[7)] NO DATA

[8)] NO DATA

[9)] NO DATA

2.11 RABIES

2.11.1 General evaluation of the national situation

A. Rabies general evaluation

History of the disease and/or infection in the country

Rabies is endemic disease in Croatia. Untill oral vacination of foxes, rabies was whidespread in all counties. Due to fact, that 500-1000 cases of rabid animals were detected from period 2000-2011, no human cases were reported.

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

Since beginning of oral vaccination of foxes significant decrease of rabies cases is reported. In 2011 324 cases were reported, in 2012 123 cases,and in 2013 only 37 cases.

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

n/a

Recent actions taken to control the zoonoses

Oral vaccination of foxes started in 2011. and is ongoing. Furthermore, obligatory vaccination of dogs and identification of all dogs is mandatory. All dogs have to be registered in national database, and vaccinated once per year.

Suggestions to the European Union for the actions to be taken

Provide further cofinancing of oral vaccination of foxes (from 2016. onwards) in Western Balkan region (Serbia, Montenegro, Bosnia and Herzegovina).

Additional information

Multiannual programme for cofinancing of oral vaccination of foxes is approved by EC for period from 2014. till 2018.

2.11.2 Lyssavirus (rabies) in animals

A. Rabies in dogs

Monitoring system

Sampling strategy

n/a

Frequency of the sampling

n/a

Type of specimen taken

n/a

Methods of sampling (description of sampling techniques)

n/a

Case definition

n/a

Diagnostic/analytical methods used

n/a

Vaccination policy

All dogs (older than 3 months) have to be identified with microchip and vaccinated once per year.

Other preventive measures than vaccination in place

n/a

Control program/mechanisms

The control program/strategies in place

All dogs older than three months must be vaccinated against rabies in the entire territory of the Republic of Croatia. Dogs must be marked with microchip.

Recent actions taken to control the zoonoses

Oral vaccination of foxes.

Suggestions to the European Union for the actions to be taken

n/a

Measures in case of the positive findings or single cases

Clinically healthy dogs which have wounded people have to be put under official control over the period of 10 days (three clinical examination: first, fifth and tenth day). If suspicion is confirmed- euthanasia and laboratory testing.
If it is not confirmed- six month quarantine if animal is vaccinated.

Notification system in place

Rabies is notifiable disease in Croatia.

Results of the investigation

Routine laboratory testing- according to the OIE recommendations (direct FAT and PCR).

Investigations of the human contacts with positive cases

Indication for use of immunoprophylaxis (vaccination and immunoglobulin) is determined by a physician.

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

In 2013 there was only one confirmed case of rabies in dogs. Significant decreasing of positive cases.

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

n/a

Additional information

n/a

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Cattle (bovine animals)		Suspect sampling	Official sampling	animal sample > brain	Domestic	Animal		35	0	0	
Sheep		Suspect sampling	Official sampling	animal sample > brain	Domestic	Animal		30	0	0	
Goats		Suspect sampling	Official sampling	animal sample > brain	Domestic	Animal		13	0	0	
Pigs		Suspect sampling	Official sampling	animal sample > brain	Domestic	Animal		1	0	0	
Solipeds, domestic		Suspect sampling	Official sampling	animal sample > brain	Domestic	Animal		5	1	1	
Dogs - stray dogs		Suspect sampling	Official sampling	animal sample	Domestic	Animal		330	1	1	
Cats - stray cats		Suspect sampling	Official sampling	animal sample > brain	Domestic	Animal		362	0	0	
Foxes - wild - Monitoring		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		3380	34	34	
Raccoons - wild - Monitoring		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		1	0	0	
Wolves - wild - Monitoring		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		15	0	0	
Badgers - Unknown - Unspecified		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		11	0	0	
Bats - Clinical investigations		Selective sampling	Official sampling	animal sample	Unknown	Animal		32	0		0

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Deer - wild - red deer - Unknown - Unspecified		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		21	0		
Deer - wild - roe deer - Unknown - Unspecified		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		111	0	0	
Marten - Unknown - Unspecified		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		120	1	1	
Wild boars - wild - Unknown - Unspecified		Suspect sampling	Official sampling	animal sample > brain	Unknown	Animal		180	0	0	

	EBLV-2	Lyssavirus (unspecified virus)
Cattle (bovine animals)		
Sheep		
Goats		
Pigs		
Solipeds, domestic		
Dogs - stray dogs		
Cats - stray cats		
Foxes - wild - Monitoring		
Raccoons - wild - Monitoring		

Table Rabies in animals

	EBLV-2	Lyssavirus (unspecified virus)
Wolves - wild - Monitoring		
Badgers - Unknown - Unspecified		
Bats - Clinical investigations	0	
Deer - wild - red deer - Unknown - Unspecified		
Deer - wild - roe deer - Unknown - Unspecified		
Marten - Unknown - Unspecified		
Wild boars - wild - Unknown - Unspecified		

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.13 Q-FEVER

2.13.1 General evaluation of the national situation

A. Coxiella burnetii (Q-fever) general evaluation

History of the disease and/or infection in the country

Q-fever frequently is present as an enzootic among domestic animals in Republic of Croatia.

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

n/a

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

n/a

Recent actions taken to control the zoonoses

For detection of Q-fever, all abortions in cows, sheep and goats must be notified to a veterinarian. The authorised veterinarian shall take samples from the aborting animal and shall submit them to the official laboratory to be tested for Q-fever.

Suggestions to the European Union for the actions to be taken

n/a

Additional information

Elimination of the sources of the infection, isolation of the affected animals and antibiotic therapy is applied when disease in confirmed.

2.14 WEST NILE VIRUS INFECTIONS

2.14.1 General evaluation of the national situation

2.14.2 West Nile Virus in animals

A. West Nile Virus in Animals

Monitoring system

Sampling strategy

During 2013 total number of 3 460 serum samples of equine animals was tested. Samples were taken from equine animals from all counties (21 counties).

Frequency of the sampling

During the year 2013.

Type of specimen taken

Equine animals.

Methods of sampling (description of sampling techniques)

Testing by IgG ELISA. Positive IgG serological results were confirmed by IgM ELISA. Results showed that IgM antibodies were present in 9 out of 226 IgG positive sera.

Case definition

Positive animal is an animal with a positive results for WNV.

Diagnostic/analytical methods used

ELISA

Vaccination policy

There is no vaccination.

Other preventive measures than vaccination in place

n/a

Control program/mechanisms

The control program/strategies in place

Active survaillance was based on serological testing of horses, birds (sentinel animals) and insects (mosquitos).
Passive survailance was based on serological testing of dead and shoot birds and horses with clinical signs of CNS disorders.

Recent actions taken to control the zoonoses

....

Suggestions to the European Union for the actions to be taken

n/a

Measures in case of the positive findings or single cases

There was no positive findings (including occurence of clinical signs).

Notification system in place

West Nile Disease (WND) is on the list of notifiable diseases in Croatia.

Results of the investigation

IgM antibodies were present in 9 out of 226 horse sera (4%). Analysing the data on testing by IgG antibodies we found positive animals in 16 counties. The highest seroprevalence was found in counties of Eastern and Southwest part of Croatia. During 2013 there was no clinical evidence of disease in equine animals.

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

In 2013 we noticed decreasing of seroprevalence compared to the 2012.

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

....

Additional information

....

Table West Nile Virus in Animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Vaccination status	Analytical Method	Sampling unit	Region	Units tested	Total units positive for West Nile Virus
Solipeds, domestic - horses - Farm - Monitoring - active		Objective sampling	Official sampling	animal sample > blood	Domestic	Unknown	IgM-capture ELISA (MAC-ELISA)	Animal		226	9

Footnote:

Serum samples were tasted by IgM ELISA.

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

3.1.2 Antimicrobial resistance in Escherichia coli, non-pathogenic

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers - sampling in the framework of the broiler baseline study - Slaughterhouse - Domestic - Monitoring - EFSA specifications - animal sample - caecum - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified	Gallus gallus (fowl) - broilers - sampling in the framework of the broiler baseline study - Slaughterhouse - Monitoring - EFSA specifications																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	150																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	2	150	6									3	56	59	26		1		5							
Aminoglycosides - Streptomycin	16	150	80													12	41	17	10	16	54					
Amphenicols - Chloramphenicol	16	150	22													36	88	4	3	19						
Cephalosporins - Cefotaxime	0.25	150	27							86	33	4		2	4	21										
Fluoroquinolones - Ciprofloxacin	0.064	150	133				15		2		1	35	10	6	2	10	69									
Penicillins - Ampicillin	8	150	95												15	31	9		95							
Quinolones - Nalidixic acid	16	150	128													20	2			128						
Sulfonamides	256	150	89														8	24	16	10	2	1		89		
Tetracyclines - Tetracycline	8	150	84											6	56	2	2		3	81						
Trimethoprim	2	150	69										76	5		1			68							
Cephalosporins - Ceftazidime	0.5	150	29									113	8	9		5	4	11								

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers - sampling in the framework of the broiler baseline study - Slaughterhouse - Domestic - Monitoring - EFSA specifications - animal sample - caecum - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified	Gallus gallus (fowl) - broilers - sampling in the framework of the broiler baseline study - Slaughterhouse - Monitoring - EFSA specifications	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	150	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Aminoglycosides - Streptomycin		
Amphenicols - Chloramphenicol		
Cephalosporins - Cefotaxime		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Quinolones - Nalidixic acid		
Sulfonamides		
Tetracyclines - Tetracycline		
Trimethoprim		
Cephalosporins - Ceftazidime		

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

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	EFSA	16	
Amphenicols	Chloramphenicol	EFSA	16	
	Florfenicol		16	
Cephalosporins	Cefotaxime	EFSA	0.25	
	Ceftazidime	EFSA	0.5	
Fluoroquinolones	Ciprofloxacin	EFSA	0.064	
Penicillins	Ampicillin	EFSA	8	
Quinolones	Nalidixic acid	EFSA	16	
Sulfonamides	Sulfonamides	EFSA	256	
	Sulfamethoxazole	EFSA	64	
Tetracyclines	Tetracycline	EFSA	8	
Trimethoprim	Trimethoprim	EFSA	2	

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

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
	Ceftazidime		0.5	
Fluoroquinolones	Ciprofloxacin		0.064	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
	Sulfamethoxazole		64	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
	Ceftazidime		0.5	
Fluoroquinolones	Ciprofloxacin		0.064	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
	Sulfamethoxazole		64	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

Table Antimicrobial susceptibility testing of E. faecalis in Gallus gallus (fowl) - broilers - before slaughter - Domestic - Monitoring - animal sample - caecum - quantitative data [Dilution method]

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

E. faecalis	Gallus gallus (fowl) - broilers - before slaughter - Monitoring																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	81																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	32	81	3														17	60	1					3		
Amphenicols - Chloramphenicol	32	81	4													1	63	13	0	2	2					
Fluoroquinolones - Ciprofloxacin	4	81	27									1	2	37	8	6	1	26								
Penicillins - Ampicillin	4	81	0										12	57	8	4										
Tetracyclines - Tetracycline	4	81	72											8	1		1		10	25	36					
Glycopeptides (Cyclic peptides, Polypeptides) - Daptomycin	4	81	0											22	39	20										
Glycopeptides (Cyclic peptides, Polypeptides) - Teicoplanin	2	81	0										81													
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	81	4											36	37	4	4									
Glycylcyclines - Tigecycline	0.25	81	0						6	23	50	2														
Macrolides - Erythromycin	4	81	37											32	5	7	3	3	1	1	29					
Oxazolidines - Linezolid	4	81	0											8	72	1										
Streptogramins - Quinupristin/Dalfopristin	16	81	1										1		4	5	51	19	1							

Table Antimicrobial susceptibility testing of E. faecalis in Gallus gallus (fowl) - broilers - before slaughter - Domestic - Monitoring - animal sample - caecum - quantitative data [Dilution method]

E. faecalis	Gallus gallus (fowl) - broilers - before slaughter - Monitoring	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	81	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Amphenicols - Chloramphenicol		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Tetracyclines - Tetracycline		
Glycopeptides (Cyclic peptides, Polypeptides) - Daptomycin		
Glycopeptides (Cyclic peptides, Polypeptides) - Teicoplanin		
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin		
Glycylcyclines - Tigecycline		
Macrolides - Erythromycin		
Oxazolidines - Linezolid		
Streptogramins - Quinupristin/Dalfopristin		

Table Antimicrobial susceptibility testing of E. faecium in Gallus gallus (fowl) - broilers - before slaughter - Slaughterhouse - Domestic - Monitoring - EFSA specifications - animal sample - caecum - quantitative data [Dilution method]

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

E. faecium	Gallus gallus (fowl) - broilers - before slaughter - Slaughterhouse - Monitoring - EFSA specifications																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	69																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>4096
Aminoglycosides - Gentamicin	32	69	2														31	31	5					2		
Amphenicols - Chloramphenicol	32	69	1													8	26	22	12	1						
Fluoroquinolones - Ciprofloxacin	4	69	21										1	4	12	31	7	14								
Penicillins - Ampicillin	4	69	13										9	26	5	16	5		5	3						
Tetracyclines - Tetracycline	4	69	49											18	1	1		1	6	8	34					
Glycopeptides (Cyclic peptides, Polypeptides) - Daptomycin	4	69	6										1	2	18	42	5	1								
Glycopeptides (Cyclic peptides, Polypeptides) - Teicoplanin	2	69	0										69													
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	69	0											55	11	3										
Glycylcyclines - Tigecycline	0.25	69	1						9	34	24	1	1													
Macrolides - Erythromycin	4	69	32											21	7	9	5	2	1		24					
Oxazolidines - Linezolid	4	69	2											8	56	3	2									
Streptogramins - Quinupristin/Dalfopristin	1	69	45										18	6	17	13	10	5								

Table Antimicrobial susceptibility testing of E. faecium in Gallus gallus (fowl) - broilers - before slaughter - Slaughterhouse - Domestic - Monitoring - EFSA specifications - animal sample - caecum - quantitative data [Dilution method]

E. faecium	Gallus gallus (fowl) - broilers - before slaughter - Slaughterhouse - Monitoring - EFSA specifications	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	69	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin		
Amphenicols - Chloramphenicol		
Fluoroquinolones - Ciprofloxacin		
Penicillins - Ampicillin		
Tetracyclines - Tetracycline		
Glycopeptides (Cyclic peptides, Polypeptides) - Daptomycin		
Glycopeptides (Cyclic peptides, Polypeptides) - Teicoplanin		
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin		
Glycylcyclines - Tigecycline		
Macrolides - Erythromycin		
Oxazolidines - Linezolid		
Streptogramins - Quinupristin/Dalfopristin		

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

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	32	
	Streptomycin	EFSA	512	
Amphenicols	Chloramphenicol	EFSA	32	
Fluoroquinolones	Ciprofloxacin	EFSA	4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EFSA	4	
	Daptomycin		4	
	Teicoplanin		2	
Macrolides	Erythromycin	EFSA	4	
Oxazolidines	Linezolid	EFSA	4	
Penicillins	Ampicillin	EFSA	4	
Streptogramins	Quinupristin/Dalfopristin		16	
Tetracyclines	Tetracycline	EFSA	4	
Glycylcyclines	Tigecycline		0.25	

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	32	
	Streptomycin	EFSA	128	
Amphenicols	Chloramphenicol	EFSA	32	
Fluoroquinolones	Ciprofloxacin	EFSA	4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EFSA	4	
	Daptomycin		4	
	Teicoplanin		2	
Macrolides	Erythromycin	EFSA	4	
Oxazolidines	Linezolid	EFSA	4	
Penicillins	Ampicillin	EFSA	4	
Streptogramins	Quinupristin/Dalfopristin	EFSA	1	
Tetracyclines	Tetracycline	EFSA	4	
Glycylcyclines	Tigecycline		0.25	

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 CRONOBACTER

4.1.1 General evaluation of the national situation

4.1.2 Cronobacter in foodstuffs

Table Cronobacter in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Cronobacter	Cronobacter sakazakii	Cronobacter spp, unspecified
Infant formula - dried - Retail - Surveillance	MH	Selective sampling	Official sampling	food sample	Intra EU trade	Batch	10g	90	0		

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

4.2.2 Histamine in foodstuffs

A. Histamine in foodstuffs

Monitoring system

Sampling strategy

Defined by National Food Sampling Plan for the Purpose of Microbiological Tests on the Internal Market of Croatia (NFSP-His) following criteria laid down by Regulation (EC) No 2073/2005

Frequency of the sampling

The NFSP-His was performed within 3 months (october-december)

Type of specimen taken

The fishery products from fish species which are especially rich in histidine consist of:
1)Fresh fish samples, i.e. sardines (29 samples, 13 from retail (n=1), and 2 from processing plan (n=9)); anchovy (2 samples, 1 from retail (n=1), 1 processing plant (n=9)); sprat (1 from retail, n=1);mackerel (3 samples from retail, (n=1));
2)Frozen fish samples, i.e. sardines (8 samples from processing plant (n=9)); sprats (4 samples, 1 from retail (n=1), 3 processing plant (n=9)); anchovy (3 processing plant (n=9)); mackerel (1 sample from retail (n=1)); scomber (1 sample from retail (n=1));
3)Marinated fishery products, i.e. carpaccio from anchovy (1 sample from processing plant (n=9)); marinated anchovy fillet in oil (1 sample from processing plant (n=9))
4)Smoked fishery products, i.e. scomber (1 sample from processing plant (n=9)); tuna (1 sample from processing plant (n=9)
5)Canned fishery products, i.e. canned sardines in differnt edible oil types (6 sample from processing plant (n=9))
The Fishery products which have undergone enzyme ripening treatment in brine consist of:
1)Salted fishery products, i.e. anchovies (9 samples from processing plant (n=9)); sardines (3 samples from processing plant (n=9))
2)Salted fish fillets in edible oil (3 samples from processing plant (n=9))

Methods of sampling (description of sampling techniques)

The normal sampling plan for histamine from fishery products consists of nine samples at processing plant, and 1 sample from batch at retail level.

Definition of positive finding

In accordance with Regulation (EC) No 2073/2005.

Diagnostic/analytical methods used

Reference method of liquid chromatography (HPLC-DAD), accredited method

Notification system in place

/

Results of the investigation

1 positive sample of frozen sardine (8 units were positive)

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

/

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

/

Table Histamine in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units in non-conformity	<= 100 mg/kg	>100 - <= 200 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Processing plant - Surveillance [1)]	National Food Sampling Plan for the Purpose of Microbiological Tests on the Internal Market of Croatia	Objective sampling	Official sampling	animal sample	Domestic	Batch	300-500g per sample unit	315	8	307	4
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Retail - Surveillance [2)]	National Food Sampling Plan for the Purpose of Microbiological Tests on the Internal Market of Croatia	Objective sampling	Official sampling	animal sample	Domestic	Single	300-500 g per sample	22	0	22	0
Fish - Fishery products which have undergone enzyme maturation treatment in brine - Processing plant - Surveillance [3)]	National Food Sampling Plan for the Purpose of Microbiological Tests on the Internal Market of Croatia	Objective sampling	Official sampling	animal sample	Domestic	Batch	300-500 g per sample unit	126	0	126	0
Fish - Fishery products which have undergone enzyme maturation treatment in brine - Retail - Surveillance		Objective sampling	Official sampling	animal sample	Domestic	Single					

Table Histamine in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units in non-conformity	<= 100 mg/kg	>100 - <= 200 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Processing plant - Surveillance [4)]	National Food Sampling Plan for the Purpose of Microbiological Tests on the Internal Market of Croatia	Objective sampling	Official sampling	animal sample	Intra EU trade	Batch	300-500 g per sample unit	18	0	18	0
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Retail - Surveillance [5)]	National Food Sampling Plan for the Purpose of Microbiological Tests on the Internal Market of Croatia	Objective sampling	Official sampling	animal sample	Intra EU trade	Single	300-500 g per samling unit	1	0	1	0
Fishery products, unspecified - Retail - Surveillance [6)]	MH	Suspect sampling	Official sampling	food sample	Imported from outside EU	Batch	160 g per sample	9	1	0	1
Fishery products, unspecified - ready-to-eat - Retail - Monitoring	MH	Objective sampling	Official sampling	food sample	Domestic	Batch	10 g	47	0	47	0

	>200 - <= 400 mg/kg	> 400 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Processing plant - Surveillance [1)]	4	0

Table Histamine in food

	>200 - <= 400 mg/kg	> 400 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Retail - Surveillance [2)]	0	0
Fish - Fishery products which have undergone enzyme maturation treatment in brine - Processing plant - Surveillance [3)]	0	0
Fish - Fishery products which have undergone enzyme maturation treatment in brine - Retail - Surveillance		
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Processing plant - Surveillance [4)]	0	0
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Retail - Surveillance [5)]	0	0
Fishery products, unspecified - Retail - Surveillance [6)]	0	0
Fishery products, unspecified - ready-to-eat - Retail - Monitoring	0	0

Comments:

[1)] 35 samples, 1 sample represents 9 sampling units

[2)] 22 samples, 1 sample is presented by 1 unit

[3)] 14, 1 sample represents 9 sampling units

[4)] 2 samples, 1 sample represents 9 sampling units

Table Histamine in food

Comments:

[5)] 1 sample

[6)] 9 samples

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

4.3.2 Staphylococcal enterotoxins in foodstuffs

Table Staphylococcal enterotoxins in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Bakery products - cakes - containing heat-treated cream - Retail - Monitoring - passive [1)]	MH	Selective sampling	Official sampling	food sample	Domestic	Single	25g	80	0
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - minced meat - intended to be eaten cooked - chilled - Retail - Monitoring - passive (/) [2)]	MH	Selective sampling	Official sampling	food sample > meat	Unknown	Single	25g	172	0
Ready-to-eat salads - Retail - Survey - national survey (food borne outbreak) [3)]	MH	Suspect sampling	Official sampling	food sample	Domestic	Single	25g	2	0

Comments:

[1)] /

[2)] /

[3)] /

5. FOODBORNE

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

A. Foodborne outbreaks

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

The reporting of Foodborne outbreaks in Croatia is regulated by a number of laws and ordinances (Act on the Protection of the Population against Communicable Diseases (OG 79/2007; 113/08; 44/09), List of Communicable Diseases the control and prevention of which is of interest to Croatia (OG 79/09), Ordinance on the method of reporting communicable diseases (OG 23/94). Pursuant to the above-mentioned regulations each foodborne outbreak is mandatorily notified to the Epidemiology Service of the Croatian National Institute of Public Health (CNIPH) immediately when the outbreak occurs and is identified. Epidemiology Service of the Croatian National Institute of Public health receives paper report about an outbreak with all the necessary information after the completion of the outbreak investigation.

The outbreaks are investigated by the field epidemiology team that has a microbiological support from the county public health laboratories (21). They also notify and cooperate with the sanitary inspectors and this approach enables enviromental analysis (inspection of food facilities) and taking samples for laboratory investigation.

Description of the types of outbreaks covered by the reporting:

Reporting covers outbreaks of all infectious diseases listed in the List of communicable diseases the control and prevention of which is of interest to Croatia (OG 79/09). The Croatian National Institute of Public Health is also mandated to investigate outbreaks of unknown origin. Reporting covers the entire range of microbiological agents as well as histamine poisoning.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

In 2013., 60 food-borne outbreaks affecting 752 persons were reported. 49 persons were hospitalized and 0 person died.Out of 60 FB outbreaks, 6 had a strong evidence.

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

The most often identified causative agent was Salmonella. The data quality does not currently allow conclusions to be drawn about the relevance of different food categories

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

Staph aureus outbreak in a canteen: vehicles were probably different food categories;
Clostridium botulinum outbreak in one household: vehicle was meat (sausages) conserved with pig fat.

Table Foodborne Outbreaks: summarised data

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Salmonella - S. Typhimurium	0	0	0	0	0	0
Salmonella - S. Enteritidis	25	187	24	0	2	27
Salmonella - Other serovars	4	17	2	0	0	4
Campylobacter	8	18	2	0	0	8
Listeria - Listeria monocytogenes	0	0	0	0	0	0
Listeria - Other Listeria	0	0	0	0	0	0
Yersinia	0	0	0	0	0	0
Escherichia coli, pathogenic - Verotoxigenic E. coli (VTEC)	0	0	0	0	0	0
Bacillus - B. cereus	0	0	0	0	0	0
Bacillus - Other Bacillus	0	0	0	0	0	0
Staphylococcal enterotoxins	0	0	0	0	1	1
Clostridium - Cl. botulinum	0	0	0	0	1	1
Clostridium - Cl. perfringens	1	11	0	0	1	2

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Clostridium - Other Clostridia	0	0	0	0	0	0
Other Bacterial agents - Brucella	0	0	0	0	0	0
Other Bacterial agents - Shigella	1	21	0	0	0	1
Other Bacterial agents - Other Bacterial agents	1	31	0	0	0	1
Parasites - Trichinella	0	0	0	0	0	0
Parasites - Giardia	0	0	0	0	0	0
Parasites - Cryptosporidium	0	0	0	0	0	0
Parasites - Anisakis	0	0	0	0	0	0
Parasites - Other Parasites	0	0	0	0	0	0
Viruses - Norovirus	6	209	2	0	0	6
Viruses - Hepatitis viruses	0	0	0	0	0	0
Viruses - Other Viruses	5	86	1	0	0	5
Other agents - Histamine	0	0	0	0	1	1
Other agents - Marine biotoxins	1	23	1	0	0	1
Other agents - Other Agents	0	0	0	0	0	0

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Unknown agent	2	55	0	0	0	2

Table Foodborne Outbreaks: detailed data for Clostridium

Please use CTRL for multiple selection fields

C. perfringens

	Value
FBO Code	CNIPH_25_02_2013
Number of outbreaks	1
Number of human cases	60
Number of hospitalisations	1
Number of deaths	0
Food vehicle	Meat and meat products
More food vehicle information	
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Restaurant or Cafe or Pub or Bar or Hotel or Catering service
Place of origin of problem	Restaurant or Cafe or Pub or Bar or Hotel or Catering service
Origin of food vehicle	Domestic
Contributory factors	Cross-contamination
Mixed Outbreaks (Other Agent)	
Additional information	

C. botulinum

	Value
FBO Code	CNIPH_15_07_2013
Number of outbreaks	1
Number of human cases	3
Number of hospitalisations	3
Number of deaths	0
Food vehicle	Meat and meat products
More food vehicle information	homemade meat product (sausages)
Nature of evidence	Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans
Outbreak type	Household
Setting	Household
Place of origin of problem	Household
Origin of food vehicle	Domestic
Contributory factors	Other contributory factor
Mixed Outbreaks (Other Agent)	
Additional information	

Table Foodborne Outbreaks: detailed data for Other agents

Please use CTRL for multiple selection fields

Histamine

	Value
FBO Code	CNIPH_15_02_2013
Number of outbreaks	1
Number of human cases	3
Number of hospitalisations	1
Number of deaths	0
Food vehicle	Fish and fish products
More food vehicle information	tuna salad
Nature of evidence	Detection of causative agent in food chain or its environment - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Restaurant or Cafe or Pub or Bar or Hotel or Catering service
Place of origin of problem	Restaurant or Cafe or Pub or Bar or Hotel or Catering service
Origin of food vehicle	Imported from outside EU
Contributory factors	Other contributory factor
Mixed Outbreaks (Other Agent)	
Additional information	

Table Foodborne Outbreaks: detailed data for Salmonella

Please use CTRL for multiple selection fields

S. Enteritidis - Not typeable

	Value
FBO Code	CNIPH_30_04_2013
Number of outbreaks	1
Number of human cases	8
Number of hospitalisations	2
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	causative agent in french salad and cakes
Nature of evidence	Descriptive epidemiological evidence
Outbreak type	General
Setting	Household
Place of origin of problem	Household
Origin of food vehicle	Domestic
Contributory factors	Inadequate heat treatment
Mixed Outbreaks (Other Agent)	
Additional information	

S. Enteritidis - Not typeable

	Value
FBO Code	CNIPH_20_08_2013
Number of outbreaks	1
Number of human cases	14
Number of hospitalisations	11
Number of deaths	0
Food vehicle	Eggs and egg products
More food vehicle information	home made cakes (cake cream prepared with not properly cooked eggs)
Nature of evidence	Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans
Outbreak type	General
Setting	Camp or picnic
Place of origin of problem	Household
Origin of food vehicle	Domestic
Contributory factors	Inadequate heat treatment
Mixed Outbreaks (Other Agent)	
Additional information	

Table Foodborne Outbreaks: detailed data for Staphylococcal enterotoxins

Please use CTRL for multiple selection fields

Enterotoxin, unspecified

	Value
FBO Code	CNIPH_05_06_2013
Number of outbreaks	1
Number of human cases	6
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	meat and cake
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	Household
Setting	Household
Place of origin of problem	Unknown
Origin of food vehicle	Domestic
Contributory factors	Cross-contamination
Mixed Outbreaks (Other Agent)	
Additional information	