European Food Safety Authority

ZOONOSES MONITORING

Iceland

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

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

IN 2017

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 Iceland during the year 2017.

The information covers the occurrence of these diseases and agents in animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and indicator 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 Union 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 European Union 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 European Union Summary Reports on zoonoses and antimicrobial resistance that are published each year by EFSA.

The national report contains two parts: tables summarising data reported in the Data Collection Framework and the related text forms. The text forms were sent by email as pdf files and they are incorporated at the end of the report.

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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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ANIMAL POPULATION TABLES

Table Susceptible animal population

		Population			
Animal species	**Category of animals**	**holding**	**animal**	**slaughter animal (heads)**	**herd/flock**
Cattle (bovine animals)	Cattle (bovine animals) - calves (under 1 year) - dairy calves	679	11,739		679
	Cattle (bovine animals) - calves (under 1 year) - for slaughter	695	11,089		695
	Cattle (bovine animals) - dairy cows - adult	619	26,742		619
	Cattle (bovine animals) - dairy cows - young cattle (1-2 years)	591	6,671		591
	Cattle (bovine animals) - meat production animals - suckler cows	135	2,266		135
	Cattle (bovine animals) - unspecified			22,861	
	Cattle (bovine animals) - young cattle (1-2 years)	764	22,388		764
Gallus gallus (fowl)	Gallus gallus (fowl) - broilers	28	766,369	5,596,611	88
	Gallus gallus (fowl) - laying hens - adult	12	244,393		35
	Gallus gallus (fowl) - laying hens - during rearing period	8	94,066		12
	Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult	4	60,492	33,173	19
	Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period	6	52,717		14
	Gallus gallus (fowl) - parent breeding flocks for egg production line - adult	2	4,097		2
	Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period	1	5,092		1
Goats	Goats	113	1,300	401	113
Pigs	Pigs - breeding animals - raised under controlled housing conditions - boars	15	68	15	15
	Pigs - breeding animals - raised under controlled housing conditions - sows	20	3,508	237	20
	Pigs - fattening pigs - raised under controlled housing conditions	21	29,949	75,904	21
	Pigs - fattening pigs - raised under controlled housing conditions - piglets	13	7,000		13
Sheep	Sheep - animals over 1 year	2,374	377,100	56,762	2,374
	Sheep - animals under 1 year (lambs)	2,183	80,800	561,259	2,183
Solipeds, domestic	Solipeds, domestic - horses		64,788	8,379	
Turkeys	Turkeys - meat production flocks	5	15,306	38,682	9
	Turkeys - parent breeding flocks - adult	1	503		1
	Turkeys - parent breeding flocks - during rearing period	2	1,447		3

DISEASE STATUS TABLES

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

Region	Number of herds with status officially free	Number of infected herds	Total number of herds
ICELAND	808	0	808

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

Region	Number of herds with status officially free	Number of infected herds	Total number of herds
ICELAND	2,374	0	2,374

DISEASE STATUS TABLES

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

Region	Number of herds with status officially free	Number of infected herds	Total number of herds
ICELAND	808	0	808

PREVALENCE TABLES

Table Campylobacter:CAMPYLOBACTER in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Gallus gallus (fowl) - broilers - before slaughter - Farm - Iceland - animal sample - faeces - Control and eradication programmes - Industry sampling - Census	Not Available	herd/flock	745	23	thermotolerant Campylobacter, unspecified	23
	Gallus gallus (fowl) - broilers - Slaughterhouse - Iceland - animal sample - caecum - Control and eradication programmes - Industry sampling - Selective sampling	Not Available	slaughter animal batch	517	13	thermotolerant Campylobacter, unspecified	13
	Turkeys - meat production flocks - before slaughter - Farm - Iceland - animal sample - faeces - Control and eradication programmes - Industry sampling - Census	Not Available	herd/flock	29	2	thermotolerant Campylobacter, unspecified	2
	Turkeys - meat production flocks - Slaughterhouse - Iceland - animal sample - caecum - Control and eradication programmes - Industry sampling - Selective sampling	Not Available	slaughter animal batch	42	0	Campylobacter	0

Table COXIELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Method	Total units tested	Total units positive	N of clinical affected herds	Zoonoses	N of units positive
Not Available	Cattle (bovine animals) - dairy cows - adult - Farm - Iceland - animal sample - milk - Monitoring - Official sampling - Objective sampling	herd/flock	Enzyme-linked immunosorbent assay (ELISA)	70	0	0	Coxiella burnetii	0

Table Escherichia coli:ESCHERICHIA COLI in feed

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Method	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Pet food - final product - Border inspection activities - United States - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	20	Gram	Not Available	5	0	Escherichia coli	0

Table HISTAMINE in food

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Total units tested	Total units positive	Method	Zoonoses	N of units tested	N of units positive
Not Available	Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - Border inspection activities - Thailand - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	5	Gram	9	0	<= 100	Histamine	0	0
							>100 TO <= 200	Histamine	0	0
							>200	Histamine	0	0
	Fish - sauce produced by fermentation of fishery products - Border inspection activities - Thailand - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	5	Gram	1	0	> 400	Histamine	0	0
							<=400	Histamine	0	0

Table LISTERIA in food

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Total units tested	Total units positive	Method	Zoonoses	N of units tested	N of units positive
Not Available	Roe - frozen - Border inspection activities - Peru - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	5	0	detection	Listeria monocytogenes	5	0

Table Salmonella:SALMONELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	N of flocks under control programme	Target verification	Method	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Cattle (bovine animals) - dairy cows - adult - Farm - Iceland - animal sample - milk - Monitoring - Official sampling - Objective sampling	herd/flock		N_A	Enzyme-linked immunosorbent assay (ELISA)	70	0	Salmonella Dublin	0
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	749	Y	Not Available	749	3	Salmonella Agona	3
	Gallus gallus (fowl) - laying hens - adult - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	55	Y	Not Available	55	0	Salmonella	0
	Gallus gallus (fowl) - laying hens - day-old chicks - Farm - Iceland - environmental sample - delivery box liner - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	17	0	Salmonella	0
	Gallus gallus (fowl) - laying hens - during rearing period - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	10	0	Salmonella	0
	Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	42	Y	Not Available	42	0	Salmonella	0
	Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - Farm - Iceland - animal sample - eggshells - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	7	0	Salmonella	0
	Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	17	0	Salmonella	0
	Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	7	Y	Not Available	7	0	Salmonella	0
	Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	2	0	Salmonella	0
	Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	2	0	Salmonella	0
	Pigs - fattening pigs - raised under controlled housing conditions - Slaughterhouse - Iceland - animal sample - meat juice - Control and eradication programmes - Official sampling - Objective sampling	slaughter animal batch		N_A	Not Available	1038	226	Salmonella	226
	Turkeys - fattening flocks - before slaughter - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	28	Y	Not Available	28	0	Salmonella	0
	Turkeys - parent breeding flocks - adult - Farm - Iceland - environmental sample - boot swabs and dust - Control and eradication programmes - Official and industry sampling - Census	herd/flock	2	Y	Not Available	2	0	Salmonella	0
	Turkeys - parent breeding flocks - day-old chicks - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	2	0	Salmonella	0
	Turkeys - parent breeding flocks - during rearing period - Farm - Iceland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	Not Available	2	0	Salmonella	0

Table Salmonella:SALMONELLA in food

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Method	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Crustaceans - shrimps - cooked - Border inspection activities - Canada - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	5	0	Salmonella	0
	Crustaceans - shrimps - cooked - Border inspection activities - United States - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	5	0	Salmonella	0
	Dairy products (excluding cheeses) - milk powder and whey powder - Border inspection activities - United States - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	10	0	Salmonella	0
	Meat from broilers (Gallus gallus) - carcase - Slaughterhouse - Iceland - food sample - neck skin - Control and eradication programmes - Industry sampling - Census	batch (food/feed)	25	Gram	Not Available	936	1	Salmonella Infantis	1
	Meat from pig - carcase - Slaughterhouse - Iceland - food sample - carcase swabs - Surveillance - based on Regulation 2073 - Official, based on Regulation 854/2004 - Census	slaughter animal batch	300	Square centimetre	Not Available	1975	9	Salmonella 1,4,12:d:-	1
								Salmonella 4,5,12:d:-	1
								Salmonella Infantis	2
								Salmonella spp., unspecified	3
								Salmonella Typhimurium, monophasic	2
	Meat from poultry, unspecified - meat products - cooked, ready-to-eat - Border inspection activities - Thailand - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	5	0	Salmonella	0
	Meat from turkey - carcase - Slaughterhouse - Iceland - food sample - neck skin - Control and eradication programmes - Industry sampling - Census	batch (food/feed)	25	Gram	Not Available	72	0	Salmonella	0

Table Salmonella:SALMONELLA in feed

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Method	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	All feedingstuffs - Feed mill - Not Available - environmental sample - dust - Surveillance - Industry sampling - Selective sampling	batch (food/feed)	25	Gram	Not Available	314	4	Salmonella	1
								Salmonella Infantis	1
								Salmonella Ndolo	1
								Salmonella Poona	1
	Feed material of marine animal origin - fish meal - Feed mill - Not Available - environmental sample - dust - Surveillance - Industry sampling - Selective sampling	batch (food/feed)	25	Gram	Not Available	810	2	Salmonella Montevideo	2
	Pet food - final product - Border inspection activities - United States - Not Available - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	10	0	Salmonella	0

Table Trichinella:TRICHINELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Pigs - fattening pigs - raised under controlled housing conditions - Slaughterhouse - Iceland - animal sample - organ/tissue - Monitoring - Official sampling - Census	Not Available	animal	76011	0	Trichinella	0
	Solipeds, domestic - horses - Slaughterhouse - Iceland - animal sample - organ/tissue - Monitoring - Official sampling - Census	Not Available	animal	8837	0	Trichinella	0

FOODBORNE OUTBREAKS TABLES

Foodborne Outbreaks: summarized data

		Outbreak strenght	Strong			Weak			
Causative agent	Food vehicle	N outbreaks	N human cases	N hospitalized	N deaths	N outbreaks	N human cases	N hospitalized	N deaths
Aeromonas hydrophila	Vegetables and juices and other products thereof	2	128	0	0				
Campylobacter jejuni	Unknown	1	0	0	0				
Clostridium perfringens	Bovine meat and products thereof	1	58	0	0				
Norovirus	Unknown					1	81	0	0
Salmonella Typhimurium, monophasic	Unknown					1	8	0	0
Shigella sonnei	Unknown					1	29	1	0
Unknown	Unknown					2	64	0	0

Strong Foodborne Outbreaks: detailed data

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Aeromonas hydrophila	Not Available	N_A	General	Vegetables and juices and other products thereof	Leaf salat mix, imported from Italy, not washed	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Canteen or workplace catering	Processing plant	Italy	Unprocessed contaminated ingredient	N_A	2	128	unk	0
Campylobacter jejuni	Unknown	N_A	General	Unknown	N_A	Analytical epidemiological evidence	Hospital or medical care facility	Unknown	Iceland	Unknown	Several people, employees and patients of a rehabilitation center in North-Iceland, got infected in the the beginning of June 2017. Two of them sought medical care in an emergancy department and their infections were confirmed.	1	unk	unk	0
Clostridium perfringens	Not Available	N_A	General	Bovine meat and products thereof	N_A	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Canteen or workplace catering	Iceland	Inadequate heat treatment	N_A	1	58	unk	0

Weak Foodborne Outbreaks: detailed data

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Norovirus	Not Available	N_A	General	Unknown	N_A	Analytical epidemiological evidence	Camp or picnic	Camp or picnic	Unknown	Unknown	N_A	1	81	unk	0
Salmonella Typhimurium, monophasic	Unknown	N_A	General	Unknown	N_A	Analytical epidemiological evidence	Unknown	Unknown	Iceland	Unknown	All cases from the middle of August to the beginning of September. MLVA profile 3-14-10-NA-211 is the same in all cases, a common profile in humane monofasic S. Typhimurium, has also been isolated from pigs.	1	8	unk	0
Shigella sonnei	Unknown	N_A	Unknown	Unknown	N_A	Analytical epidemiological evidence	Unknown	Unknown	Iceland	Unknown	One case of Shigella sonnei infection discovered in an gastrointestinal infectious outbrake in a kindergarten; 11 children, 18 employees.	1	29	1	0
Unknown	Unknown	N_A	General	Unknown	N_A	Descriptive epidemiological evidence	Unknown	Unknown	Unknown	Unknown	Case control study did not reveal any cause	1	50	unk	0
			Unknown	Unknown	N_A	Descriptive environmental evidence	Multiple places of exposure in more than one country	Unknown	Iceland	Unknown	Probably Norovirus	1	14	unk	0

ANTIMICROBIAL RESISTANCE TABLES FOR CAMPYLOBACTER

ANTIMICROBIAL RESISTANCE TABLES FOR SALMONELLA

Table Antimicrobial susceptibility testing of Salmonella 4,5,12:d:- in Meat from pig - carcase

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Surveillance - based on Regulation 2073

Sampler: Official sampling

Sampling Strategy: Census

Programme Code: AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**256**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
MIC	**N of resistant isolates**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
<=0.015							1								
<=0.03										2					
0.03							1								
<=0.25				2										2	1
<=0.5					2				2						
<=1		1						2							
<=2			1										2		
<=4											2				
4			1												
<=8						2									
>32															1
64												1			
>64		1													
>1024												1			

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

Sampling Stage: Farm

Sampling Type: environmental sample - boot swabs

Sampling Context: Control and eradication programmes

Sampler: Official and industry sampling

Sampling Strategy: Census

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**256**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							5								
<=0.03										6					
0.03							1								
<=0.25				6										6	6
<=0.5					6				6						
<=1		6						6							
<=2			1										3		
<=4											6				
4			5										3		
<=8						6									
32												1			
64												5			

Table Antimicrobial susceptibility testing of Salmonella Infantis in Meat from broilers (Gallus gallus) - carcase

Sampling Stage: Slaughterhouse

Sampling Type: food sample - neck skin

Sampling Context: Control and eradication programmes

Sampler: Industry sampling

Sampling Strategy: Census

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**256**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										1					
<=0.25				1										1	1
<=0.5					1				1						
<=1		1						1							
<=2			1										1		
<=4											1				
<=8						1									
64												1			

Table Antimicrobial susceptibility testing of Salmonella Infantis in Meat from pig - carcase

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Surveillance - based on Regulation 2073

Sampler: Official sampling

Sampling Strategy: Census

Programme Code: AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**256**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										2					
0.03							1								
<=0.25				2										2	
<=0.5					2				2						
0.5															2
<=1		2						2							
<=2													2		
<=4											2				
4			2												
<=8						2									
64												2			

Table Antimicrobial susceptibility testing of Salmonella London in Pigs

Sampling Stage: Farm

Sampling Type: environmental sample - dust

Sampling Context: Unspecified

Sampler: Official sampling

Sampling Strategy: Selective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**256**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										1					
<=0.25				1										1	1
<=0.5					1				1						
<=1		1						1							
<=2			1										1		
<=4											1				
<=8						1									
32												1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Meat from pig - carcase

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Surveillance - based on Regulation 2073

Sampler: Official sampling

Sampling Strategy: Census

Programme Code: AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**256**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
MIC	**N of resistant isolates**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
<=0.03										2					
0.03							2								
<=0.25				2										2	1
<=0.5					2				2						
<=1		1						2							
<=2			1										2		
4			1												
<=8						2									
8											2				
32												1			
>32															1
>64		1													
>1024												1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Solipeds, domestic - horses

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Clinical investigations

Sampler: Private sampling

Sampling Strategy: Suspect sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**256**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**
<=0.015							1								
<=0.03										1					
<=0.25				1										1	1
<=0.5					1				1						
<=1								1							
<=2			1												
<=4											1				
<=8						1									
>64		1											1		
>1024												1			

ANTIMICROBIAL RESISTANCE TABLES FOR INDICATOR ESCHERICHIA COLI

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**64**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**
MIC	**N of resistant isolates**	**10**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**3**	**10**	**13**	**0**	**9**
<=0.015							63								
<=0.03										68					
0.03							2								
<=0.25				68										49	48
0.25							2								
<=0.5					68				60						
0.5														19	10
<=1		6						67							
1									8						1
<=2			42										34		
2		27						1							
<=4											62				
4		20	8										20		
<=8						66						21			
8		5	15								3		1		
>8							1								
16			3			1						24			
31												1			
32												10	2		1
>32															8

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**64**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**
MIC	**N of resistant isolates**	**10**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**3**	**10**	**13**	**0**	**9**
64		1										2	5		
>64		9											6		
128						1					1				
>128											2				
1024												1			
>1024												9			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON pnl2

Analytical Method:

Country of Origin: Iceland

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
Ceftazidime synergy test	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
ECOFF	**0.125**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
Lowest limit	**0.064**	**0.25**	**0.064**	**0.5**	**0.25**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
Highest limit	**32**	**64**	**64**	**64**	**128**	**128**	**2**	**8**	**16**	**64**
N of tested isolates	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
MIC **N of resistant isolates**	**2**	**11**	**11**	**11**	**11**	**11**	**1**	**0**	**0**	**0**
<=0.015							5			
<=0.03									10	
0.03							4			
<=0.064	3									
0.064							1		1	
<=0.12								2		
0.12	6						1			
0.25	2							7		
0.5								2		
1		1	8							
2		7	2		3	5				
4		3	1		6	4				3
8					1	1				6
16				4	1	1				2
32				4						
64				2						

	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
	Cefotaxime synergy test	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
	Ceftazidime synergy test	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
	ECOFF	**0.125**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
	Lowest limit	**0.064**	**0.25**	**0.064**	**0.5**	**0.25**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
	Highest limit	**32**	**64**	**64**	**64**	**128**	**128**	**2**	**8**	**16**	**64**
	N of tested isolates	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
MIC	**N of resistant isolates**	**2**	**11**	**11**	**11**	**11**	**11**	**1**	**0**	**0**	**0**
>64					1						

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method:

Country of Origin: Iceland

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**64**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
MIC	**N of resistant isolates**	**11**	**0**	**11**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**7**	**0**	**0**
<=0.015							8								
<=0.03										11					
0.03							3								
<=0.25														6	5
<=0.5									8						
0.5														4	6
<=1								11							
1				1					2					1	
<=2			6										1		
2				8	3				1						
<=4											11				
4			2	2	5								3		
<=8						11						1			
8			2		2										
>8					1										
16			1									5			
32												3			
64												1	5		
>64		11											2		
>1024												1			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from pig - fresh

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER ESBL MON pnl2

Analytical Method:

Country of Origin: Spain

	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
	Cefotaxime synergy test	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
	Ceftazidime synergy test	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
	ECOFF	**0.125**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
	Lowest limit	**0.064**	**0.25**	**0.064**	**0.5**	**0.25**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
	Highest limit	**32**	**64**	**64**	**64**	**128**	**128**	**2**	**8**	**16**	**64**
	N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**1**	**1**	**0**	**1**	**1**	**0**	**1**	**0**	**0**	**0**
<=0.03										1	
0.064								1			
<=0.12									1		
0.12				1							
0.25							1				
2		1									
8											1
16			1		1						
32						1					

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from pig - fresh

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER ESBL MON

Analytical Method:

Country of Origin: Spain

	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**16**	**64**	**8**	**1**	**2**
	Lowest limit	**1**	**2**	**0.25**	**0.5**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**64**	**64**	**4**	**8**	**128**	**8**	**16**	**32**	**16**	**128**	**1024**	**64**	**8**	**32**
	N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**1**
<=0.03										1					
0.25							1								
<=0.5									1						
0.5														1	
<=2			1												
2								1							
4				1											
>8					1										
>32															1
>64		1											1		
128						1									
>128											1				
>1024												1			

OTHER ANTIMICROBIAL RESISTANCE TABLES

Specific monitoring of ESBL-/AmpC-/carbapenemase-producing bacteria and specific monitoring of carbapenemase-producing bacteria, in the absence of isolate detected

Programme Code	Matrix Detailed	Zoonotic Agent Detailed	Sampling Strategy	Sampling Stage	Sampling Details	Sampling Context	Sampler	Sample Type	Sampling Unit Type	Sample Origin	Comment	Total Units Tested	Total Units Positive
ESBL MON	Meat from bovine animals - fresh	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring	Official sampling	food sample - meat	batch (food/feed)	Iceland	N_A	95	0
	Meat from pig	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring	Official sampling	food sample - meat	batch (food/feed)	Iceland	N_A	100	0
OTHER ESBL MON	Meat from bovine animals - fresh - frozen	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring	Official sampling	food sample - meat	batch (food/feed)	Denmark	All fresh meat is frozen before importation and usually thawed before arriving at retail.	2	0
										Germany	All fresh meat is frozen before importation and usually thawed before arriving at retail.	2	0
										Ireland	All fresh meat is frozen before importation and usually thawed before arriving at retail.	3	0
										New Zealand	All fresh meat is frozen before importation and usually thawed before arriving at retail.	2	0

Programme Code	Matrix Detailed	Zoonotic Agent Detailed	Sampling Strategy	Sampling Stage	Sampling Details	Sampling Context	Sampler	Sample Type	Sampling Unit Type	Sample Origin	Comment	Total Units Tested	Total Units Positive
OTHER ESBL MON	Meat from bovine animals - fresh - frozen	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring	Official sampling	food sample - meat	batch (food/feed)	Poland	All fresh meat is frozen before importation and usually thawed before arriving at retail.	2	0
										Spain	All fresh meat is frozen before importation and usually thawed before arriving at retail.	5	0
										United Kingdom	All fresh meat is frozen before importation and usually thawed before arriving at retail.	1	0
										Unknown	N_A	7	0

European Food Safety Authority

Latest Transmission set

Table Name	Last submitted dataset transmission date
Antimicrobial Resistance	01-Mar-2019
Esbl	01-Mar-2019
Animal Population	01-Mar-2019
Disease Status	01-Mar-2019
Food Borne Outbreaks	04-Mar-2019
Prevalence	04-Mar-2019