European Food Safety Authority

ZOONOSES MONITORING

Estonia

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 Estonia 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**
Bears	Bears - wild			42	
Beavers	Beavers - wild			28	
Birds	Birds - wild - game birds			338	
Cattle (bovine animals)	Cattle (bovine animals)	3,426	250,957	40,867	3,257
	Cattle (bovine animals) - calves (under 1 year)	2,785	69,405	4,772	2,363
	Cattle (bovine animals) - dairy cows and heifers	2,111	125,927	20,241	1,796
	Cattle (bovine animals) - meat production animals	2,247	51,766	10,487	1,963
Deer	Deer - wild			959	
	Deer - wild - roe deer			1,425	
Ducks	Ducks	211			209
Gallus gallus (fowl)	Gallus gallus (fowl)	2,546			2,512
	Gallus gallus (fowl) - broilers	103		11,571,514	103
	Gallus gallus (fowl) - laying hens	162		5,062	150
Geese	Geese	207			204
Goats	Goats	625	5,114	750	593
	Goats - animals over 1 year	613	4,288	597	581
	Goats - animals under 1 year	160	826	153	149
Moose	Moose - wild			2,940	
Ostriches	Ostriches - farmed	7		8	7
Pigs	Pigs	131	289,972	514,861	131
	Pigs - breeding animals - unspecified - sows and gilts	69	26,410		69
	Pigs - fattening pigs	122	141,758		122
Quails	Quails - meat production flocks	73		88,957	73
Rabbits	Rabbits - farmed	269			268
Sheep	Sheep	1,964	78,358	20,974	1,849
	Sheep - animals over 1 year	994	17,859	8,238	917
	Sheep - animals under 1 year (lambs)	1,930	60,499	12,736	1,818
Solipeds, domestic	Solipeds, domestic - horses	1,057	11,288	55	1,017
Turkeys	Turkeys	90			88
Wild boars	Wild boars - farmed	3			3
	Wild boars - wild			1,517	

DISEASE STATUS TABLES

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

Region	Number of animals serologically tested under investigations of suspect cases	Number of suspended herds under investigations of suspect cases	Number of seropositive animals under investigations of suspect cases	Number of animals positive to BST under investigations of suspect cases	Number of animals positive in microbiological testing under investigations of suspect cases	Number of herds with status officially free	Number of infected herds	Total number of animals	Number of herds tested under surveillance	Number of animals tested under surveillance	Total number of herds	Number of infected herds tested under surveillance	Number of herds tested under surveillance by bulk milk	Number of animals or pools tested under surveillance by bulk milk	Number of infected herds tested under surveillance by bulk milk	Number of notified abortions whatever cause	Number of isolations of Brucella infections	Number of abortions due to Brucella abortus	Number of animals tested by microbiology under investigations of suspect cases
ESTONIA	0	0	0	0	0	3,261	0	251,393	411	8,751	3,261	0	337	18,172	0	929	0	0	0

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

Region	Number of animals serologically tested under investigations of suspect cases	Number of suspended herds under investigations of suspect cases	Number of seropositive animals under investigations of suspect cases	Number of animals positive in microbiological testing under investigations of suspect cases	Number of herds with status officially free	Number of infected herds	Total number of animals	Number of herds tested under surveillance	Number of animals tested under surveillance	Total number of herds	Number of infected herds tested under surveillance	Number of animals tested by microbiology under investigations of suspect cases
ESTONIA	0	0	0	0	2,438	0	83,291	42	587	2,438	0	0

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 animals	Interval between routine tuberculin tests	Number of animals tested with tuberculin routine 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	Total number of herds
ESTONIA	3,261	0	251,393	48	35,112	0	0	0	3,261

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	Cattle (bovine animals) - breeding bulls - Artificial insemination station - Not Available - animal sample - Surveillance - Official sampling - Census	Not Available	animal	150	0	Campylobacter	0
	Pigs - fattening pigs - Slaughterhouse - Estonia - animal sample - caecum - Monitoring - Official sampling - Objective sampling	Not Available	slaughter animal batch	68	20	Campylobacter coli	20

Table Campylobacter:CAMPYLOBACTER 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	Meat from broilers (Gallus gallus) - carcase - Slaughterhouse - Estonia - food sample - neck skin - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	12	1	Campylobacter jejuni	1
	Meat from broilers (Gallus gallus) - fresh - Wholesale - Latvia - food sample - meat - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	2	Campylobacter jejuni	2
	Milk, cows' - raw milk - intended for direct human consumption - Farm - Estonia - food sample - milk - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Millilitre	Not Available	2	0	Campylobacter	0
	Milk, cows' - raw milk - intended for direct human consumption - Retail - Estonia - food sample - milk - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Millilitre	Not Available	2	0	Campylobacter	0
	Milk, goats' - raw milk - intended for direct human consumption - Farm - Estonia - food sample - milk - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Millilitre	Not Available	1	0	Campylobacter	0

Table Cronobacter:CRONOBACTER 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	Infant formula - dried - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Cronobacter	0

Table Echinococcus:ECHINOCOCCUS 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	Cattle (bovine animals) - unspecified - Slaughterhouse - Estonia - Not Available - Surveillance - Official sampling - Census	Not Available	animal	35408	0	Echinococcus	0
	Goats - Slaughterhouse - Estonia - Not Available - Surveillance - Official sampling - Census	Not Available	animal	108	0	Echinococcus	0
	Pigs - unspecified - Slaughterhouse - Estonia - Not Available - Surveillance - Official sampling - Census	Not Available	animal	514861	0	Echinococcus	0
	Sheep - Slaughterhouse - Estonia - Not Available - Surveillance - Official sampling - Census	Not Available	animal	8899	0	Echinococcus	0
	Solipeds, domestic - horses - Slaughterhouse - Estonia - Not Available - Surveillance - Official sampling - Census	Not Available	animal	16	0	Echinococcus	0

Table Escherichia coli:ESCHERICHIA COLI 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	ANTH	VTX	AG	N units positive
Not Available	Seeds, sprouted - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	ISO/TS 13136:2012 (including the EU-RL adaptation for O104:H4)	2	0	Verocytotoxigenic E. coli (VTEC)	Not Available	Not Available	Not Available	0
	Vegetables - non-pre-cut - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	ISO 16654:2001 or NMKL 164:2005 or DIN 10167	1	0	Verocytotoxigenic E. coli (VTEC)	Not Available	Not Available	Not Available	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 - raw - chilled - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	5	Gram	1	0	<= 100	Histamine	0	0
							>100 TO <= 200	Histamine	0	0
							<=200	Histamine	0	0
	Fish - raw - frozen - Border inspection activities - Mauritania - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	5	Gram	1	1	> 400	Histamine	0	0
							<=400	Histamine	0	1
	Fish - raw - frozen - Processing plant - Not Available - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	5	Gram	5	0	<= 100	Histamine	0	0
							>100 TO <= 200	Histamine	0	0
							<=200	Histamine	0	0
	Fish - raw - Processing plant - Norway - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	5	Gram	3	0	<= 100	Histamine	0	0
							>100 TO <= 200	Histamine	0	0
							<=200	Histamine	0	0
	Fishery products, unspecified - ready-to-eat - Border inspection activities - Taiwan - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	5	Gram	1	0	<= 100	Histamine	0	0
							>100 TO <= 200	Histamine	0	0
							<=200	Histamine	0	0
	Fishery products, unspecified - ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	5	Gram	3	0	<= 100	Histamine	0	0
							>100 TO <= 200	Histamine	0	0
							<=200	Histamine	0	0

Table Listeria:LISTERIA 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	Cattle (bovine animals) - unspecified - Farm - Not Available - animal sample - brain - Clinical investigations - Official sampling - Suspect sampling	Not Available	animal	7	1	Listeria monocytogenes	1
	Sheep - mixed herds - Farm - Not Available - animal sample - brain - Clinical investigations - Official sampling - Suspect sampling	Not Available	animal	3	2	Listeria monocytogenes	2

Table Listeria: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	Bakery products - cakes - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	11	0	<= 100	Listeria monocytogenes	11	0
							>100	Listeria monocytogenes	11	0
	Bakery products - cakes - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Bakery products - pastry - biscuits - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Cheeses made from cows' milk - fresh - made from raw or low heat-treated milk - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	3	0	detection	Listeria monocytogenes	3	0
	Cheeses made from cows' milk - hard - made from pasteurised milk - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	4	0	detection	Listeria monocytogenes	4	0
	Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	26	1	detection	Listeria monocytogenes	26	1
	Cheeses made from goats' milk - fresh - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	2	0	detection	Listeria monocytogenes	2	0
	Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	3	0	detection	Listeria monocytogenes	3	0
	Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	2	0	detection	Listeria monocytogenes	2	0
	Crustaceans - unspecified - cooked - frozen - Border inspection activities - Canada - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Crustaceans - unspecified - cooked - frozen - Border inspection activities - Canada - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Dairy products (excluding cheeses) - butter - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	5	0	detection	Listeria monocytogenes	5	0
	Dairy products (excluding cheeses) - dairy desserts - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Dairy products (excluding cheeses) - dairy products, not specified - ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	28	0	detection	Listeria monocytogenes	28	0
	Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	2	0	detection	Listeria monocytogenes	2	0
	Fish - smoked - cold-smoked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	5	2	detection	Listeria monocytogenes	5	2
	Fish - smoked - cold-smoked - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Fish - smoked - hot-smoked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	6	0	<= 100	Listeria monocytogenes	6	0
							>100	Listeria monocytogenes	6	0
	Fish - smoked - hot-smoked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	14	0	detection	Listeria monocytogenes	14	0

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 - smoked - hot-smoked - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	5	0	<= 100	Listeria monocytogenes	5	0
							>100	Listeria monocytogenes	5	0
	Fishery products, unspecified - cooked - frozen - Border inspection activities - China - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Fishery products, unspecified - non-ready-to-eat - chilled - Border inspection activities - Russia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	1	detection	Listeria monocytogenes	1	1
	Fishery products, unspecified - ready-to-eat - frozen - Border inspection activities - Vietnam - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Fishery products, unspecified - ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	5	0	<= 100	Listeria monocytogenes	5	0
							>100	Listeria monocytogenes	5	0
	Fishery products, unspecified - ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	28	0	detection	Listeria monocytogenes	28	0
	Fishery products, unspecified - ready-to-eat - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	9	0	<= 100	Listeria monocytogenes	9	0
							>100	Listeria monocytogenes	9	0
	Fishery products, unspecified - ready-to-eat - Retail - Latvia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	1	detection	Listeria monocytogenes	1	1
	Foodstuffs intended for special nutritional uses - dried dietary foods for special medical purposes intended for infants below 6 months - Hospital or medical care facility - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Fruits - non-pre-cut - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Fruits - non-pre-cut - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Fruits - products - dried - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Infant formula - dried - intended for infants below 6 months - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Infant formula - ready-to-eat - Hospital or medical care facility - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	2	0	detection	Listeria monocytogenes	2	0
	Juice - fruit juice - unpasteurised - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Meat from bovine animals - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	2	0	<= 100	Listeria monocytogenes	2	0
							>100	Listeria monocytogenes	2	0
	Meat from bovine animals - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	10	0	detection	Listeria monocytogenes	10	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/fee d)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0

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	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	9	0	detection	Listeria monocytogenes	9	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	9	0	<= 100	Listeria monocytogenes	9	0
							>100	Listeria monocytogenes	9	0
	Meat from farmed game- land mammals - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Meat from pig - meat products - cooked, ready-to-eat - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	3	0	<= 100	Listeria monocytogenes	3	0
							>100	Listeria monocytogenes	3	0
	Meat from pig - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	2	0	<= 100	Listeria monocytogenes	2	0
							>100	Listeria monocytogenes	2	0
	Meat from pig - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	45	2	detection	Listeria monocytogenes	45	2
	Meat from pig - meat products - cooked, ready-to-eat - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	4	0	detection	Listeria monocytogenes	4	0
	Meat from pig - meat products - cooked, ready-to-eat - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	12	0	<= 100	Listeria monocytogenes	12	0
							>100	Listeria monocytogenes	12	0
	Meat from sheep - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Meat from turkey - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Meat from turkey - meat products - cooked, ready-to-eat - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	4	0	<= 100	Listeria monocytogenes	4	0
							>100	Listeria monocytogenes	4	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	3	0	<= 100	Listeria monocytogenes	3	0
							>100	Listeria monocytogenes	3	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	15	0	detection	Listeria monocytogenes	15	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Other processed food products and prepared dishes - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	7	0	<= 100	Listeria monocytogenes	7	0
							>100	Listeria monocytogenes	7	0

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	Other processed food products and prepared dishes - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Other processed food products and prepared dishes - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	9	0	<= 100	Listeria monocytogenes	9	0
							>100	Listeria monocytogenes	9	0
	Other processed food products and prepared dishes - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	17	0	detection	Listeria monocytogenes	17	0
	Other processed food products and prepared dishes - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	18	0	<= 100	Listeria monocytogenes	18	0
							>100	Listeria monocytogenes	18	0
	Other processed food products and prepared dishes - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Ready-to-eat salads - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	26	0	<= 100	Listeria monocytogenes	26	0
							>100	Listeria monocytogenes	26	0
	Ready-to-eat salads - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Ready-to-eat salads - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	4	0	<= 100	Listeria monocytogenes	4	0
							>100	Listeria monocytogenes	4	0
	Ready-to-eat salads - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	3	0	detection	Listeria monocytogenes	3	0
	Ready-to-eat salads - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	20	0	<= 100	Listeria monocytogenes	20	0
							>100	Listeria monocytogenes	20	0
	Ready-to-eat salads - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	2	0	detection	Listeria monocytogenes	2	0
	Spices and herbs - dried - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0
	Vegetables - non-pre-cut - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	10	Gram	5	0	<= 100	Listeria monocytogenes	5	0
							>100	Listeria monocytogenes	5	0
	Vegetables - non-pre-cut - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	3	0	detection	Listeria monocytogenes	3	0
	Vegetables - pre-cut - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Vegetables - pre-cut - Catering - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	3	0	<= 100	Listeria monocytogenes	3	0
							>100	Listeria monocytogenes	3	0
	Vegetables - pre-cut - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	10	Gram	5	0	<= 100	Listeria monocytogenes	5	0
							>100	Listeria monocytogenes	5	0
	Vegetables - pre-cut - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	4	0	detection	Listeria monocytogenes	4	0
	Vegetables - pre-cut - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	2	0	<= 100	Listeria monocytogenes	2	0
							>100	Listeria monocytogenes	2	0

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	Vegetables - pre-cut - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	3	0	detection	Listeria monocytogenes	3	0
	Vegetables - products - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	1	0	detection	Listeria monocytogenes	1	0
	Vegetables - products - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	5	0	<= 100	Listeria monocytogenes	5	0
							>100	Listeria monocytogenes	5	0
	Vegetables - products - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	4	0	detection	Listeria monocytogenes	4	0
	Vegetables - products - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	1	0	<= 100	Listeria monocytogenes	1	0
							>100	Listeria monocytogenes	1	0

Table Lyssavirus:LYSSAVIRUS 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	Badgers - wild - Natural habitat - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	7	0	Lyssavirus	0
	Bats - wild - Natural habitat - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	2	0	Lyssavirus	0
	Cats - pet animals - Unspecified - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	14	0	Lyssavirus	0
	Cattle (bovine animals) - unspecified - Farm - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	5	0	Lyssavirus	0
	Dogs - pet animals - Unspecified - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	2	0	Lyssavirus	0
	Foxes - wild - Natural habitat - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	66	0	Lyssavirus	0
	Marten - wild - Natural habitat - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	10	0	Lyssavirus	0
	Other mustelides - wild - Natural habitat - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	4	0	Lyssavirus	0
	Raccoon dogs - wild - Natural habitat - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	114	0	Lyssavirus	0
	Sheep - mixed herds - Farm - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	3	0	Lyssavirus	0
	Squirrels - wild - Natural habitat - Not Available - animal sample - brain - Control and eradication programmes - Official sampling - Suspect sampling	Not Available	animal	1	0	Lyssavirus	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) - calves (under or around 1 year) - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	12	0	Salmonella	0
	Cattle (bovine animals) - dairy cows - Farm - Not Available - animal sample - faeces - Clinical investigations - Official sampling - Suspect sampling	animal		N_A	Not Available	16	1	Salmonella Dublin	1
	Cattle (bovine animals) - dairy cows - Farm - Not Available - animal sample - fleece - Clinical investigations - Official sampling - Suspect sampling	animal		N_A	Not Available	2	0	Salmonella	0
	Cattle (bovine animals) - dairy cows - young cattle (1-2 years) - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	100	3	Salmonella Dublin	1
								Salmonella Mbandaka	1
								Salmonella Typhimurium	1
	Cattle (bovine animals) - heifers - breeding (1-2 years) - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	1	0	Salmonella	0
	Cattle (bovine animals) - meat production animals - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	2	0	Salmonella	0
	Cattle (bovine animals) - unspecified - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	28	2	Salmonella Dublin	1
								Salmonella Typhimurium	1
	Gallus gallus (fowl) - breeding flocks, unspecified - adult - Farm - Not Available - animal sample - faeces - Control and eradication programmes - Official and industry sampling - Census	herd/flock	8	Y	Not Available	5	0	Salmonella	0
	Gallus gallus (fowl) - breeding flocks, unspecified - adult - Farm - Not Available - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	8	Y	Not Available	3	0	Salmonella	0
	Gallus gallus (fowl) - breeding flocks, unspecified - during rearing period - Farm - Not Available - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock		N_A	Not Available	38	0	Salmonella	0
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Not Available - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	600	N_A	Not Available	571	0	Salmonella	0
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Not Available - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	600	Y	Not Available	600	1	Salmonella Derby	1
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Not Available - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock	600	N_A	Not Available	444	1	Salmonella Derby	1
	Gallus gallus (fowl) - laying hens - adult - Farm - Not Available - animal sample - faeces - Control and eradication programmes - Official and industry sampling - Census	herd/flock	28	Y	Not Available	15	1	Salmonella Typhimurium	1
	Gallus gallus (fowl) - laying hens - adult - Farm - Not Available - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	28	Y	Not Available	13	1	Salmonella Enteritidis	1
	Gallus gallus (fowl) - laying hens - day-old chicks - Hatchery - Not Available - animal sample - eggshells - Control and eradication programmes - Official and industry sampling - Census	herd/flock		N_A	Not Available	3	1	Salmonella Enteritidis	1
	Gallus gallus (fowl) - laying hens - during rearing period - Farm - Not Available - animal sample - faeces - Control and eradication programmes - Official and industry sampling - Census	herd/flock		N_A	Not Available	19	0	Salmonella	0
	Gallus gallus (fowl) - laying hens - during rearing period - Farm - Not Available - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock		N_A	Not Available	5	0	Salmonella	0
	Goats - meat production animals - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	1	0	Salmonella	0
	Goats - milk goats - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	5	0	Salmonella	0
	Goats - mixed herds - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	2	0	Salmonella	0
	Pigs - fattening pigs - unspecified - Farm - Not Available - animal sample - faeces - Clinical investigations - Official sampling - Suspect sampling	animal		N_A	Not Available	5	2	Salmonella Derby	2
	Pigs - fattening pigs - unspecified - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	25	7	Salmonella Agona	1
								Salmonella Choleraesuis var. Kunzendorf	2
								Salmonella Derby	4
	Pigs - fattening pigs - unspecified - Farm - Not Available - animal sample - fleece - Clinical investigations - Official sampling - Suspect sampling	animal		N_A	Not Available	1	0	Salmonella	0
	Pigs - fattening pigs - unspecified - Farm - Not Available - animal sample - organ/tissue - Clinical investigations - Official sampling - Suspect sampling	animal		N_A	Not Available	2	0	Salmonella	0
	Quails - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	4	2	Salmonella Anatum	1
								Salmonella Typhimurium	2
	Quails - Farm - Not Available - environmental sample - boot swabs - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	19	7	Salmonella	4
								Salmonella Anatum	1
								Salmonella Typhimurium, monophasic	2
	Sheep - meat production animals - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	44	13	Salmonella enterica, subspecies diarizonae	13

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	Sheep - milk ewes - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	1	1	Salmonella enterica, subspecies diarizonae	1
	Sheep - mixed herds - Farm - Not Available - animal sample - faeces - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	42	17	Salmonella enterica, subspecies arizonae	1
								Salmonella enterica, subspecies diarizonae	16
	Turkeys - unspecified - Farm - Not Available - environmental sample - boot swabs - Surveillance - Official sampling - Census	herd/flock		N_A	Not Available	1	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	Bakery products - cakes - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Bakery products - pastry - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	1	0	Salmonella	0
	Cheeses made from cows' milk - fresh - made from raw or low heat-treated milk - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Cheeses made from goats' milk - fresh - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Chocolate - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Crustaceans - shrimps - shelled, shucked and cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Crustaceans - unspecified - cooked - frozen - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Dairy products (excluding cheeses) - dairy products, not specified - ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	4	0	Salmonella	0
	Dairy products (excluding cheeses) - milk powder and whey powder - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	8	0	Salmonella	0
	Egg products - ready-to-eat - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Fruits - non-pre-cut - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Infant formula - dried - intended for infants below 6 months - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Juice - fruit juice - unpasteurised - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	10	0	Salmonella	0
	Juice - fruit juice - unpasteurised - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Juice - fruit juice - unpasteurised - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Meat from bovine animals - carcase - Slaughterhouse - Estonia - food sample - carcase swabs - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	1400	Square centimetre	Not Available	209	1	Salmonella Dublin	1
	Meat from bovine animals - fresh - Cutting plant - Estonia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	102	0	Salmonella	0
	Meat from bovine animals - fresh - Processing plant - Estonia - food sample - meat - Surveillance - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	2	0	Salmonella	0
	Meat from bovine animals - fresh - Retail - European Union - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	17	0	Salmonella	0
	Meat from bovine animals - fresh - Retail - Latvia - food sample - meat - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0

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	Meat from bovine animals - fresh - Retail - Non European Union - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	10	0	Salmonella	0
	Meat from bovine animals - fresh - Retail - Not Available - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	27	0	Salmonella	0
	Meat from bovine animals - meat preparation - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	1	0	Salmonella	0
	Meat from bovine animals - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	11	0	Salmonella	0
	Meat from bovine animals - minced meat - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	7	0	Salmonella	0
	Meat from bovine animals - minced meat - intended to be eaten cooked - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	8	0	Salmonella	0
	Meat from broilers (Gallus gallus) - carcase - Slaughterhouse - Estonia - food sample - neck skin - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	14	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - chilled - Retail - Lithuania - food sample - meat - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - chilled - Wholesale - European Union - food sample - meat - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	7	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - Cutting plant - Estonia - food sample - meat - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	12	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - frozen - Wholesale - European Union - food sample - meat - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	15	2	Salmonella Enteritidis	1
								Salmonella Infantis	1
	Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	6	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	16	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Catering - China - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	4	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	10	0	Salmonella	0
	Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from farmed game- land mammals - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from other poultry species - carcase - Slaughterhouse - Estonia - food sample - neck skin - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Meat from pig - carcase - Slaughterhouse - Estonia - food sample - carcase swabs - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	single (food/feed)	400	Square centimetre	Not Available	1649	5	Salmonella Derby	5

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	Meat from pig - carcase - Slaughterhouse - Estonia - food sample - carcase swabs - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	1400	Square centimetre	Not Available	403	7	Salmonella Derby	7
	Meat from pig - fresh - Cutting plant - Estonia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	252	1	Salmonella Derby	1
	Meat from pig - fresh - Retail - European Union - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	36	1	Salmonella Typhimurium, monophasic	1
	Meat from pig - fresh - Retail - Germany - food sample - meat - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Meat from pig - fresh - Retail - Not Available - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	36	1	Salmonella Typhimurium, monophasic	1
	Meat from pig - meat preparation - intended to be eaten cooked - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	2	0	Salmonella	0
	Meat from pig - meat preparation - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	36	1	Salmonella Infantis	1
	Meat from pig - meat preparation - intended to be eaten cooked - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	33	1	Salmonella Worthington	1
	Meat from pig - meat products - cooked, ready-to-eat - Catering - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Meat from pig - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	1	0	Salmonella	0
			25	Gram	Not Available	35	0	Salmonella	0
	Meat from pig - meat products - cooked, ready-to-eat - Retail - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from pig - meat products - cooked, ready-to-eat - Retail - European Union - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	15	0	Salmonella	0
	Meat from pig - minced meat - intended to be eaten cooked - Catering - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	1	0	Salmonella	0
	Meat from pig - minced meat - intended to be eaten cooked - chilled - Retail - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	22	1	Salmonella Derby	1
	Meat from pig - minced meat - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	11	0	Salmonella	0
	Meat from sheep - meat preparation - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	1	0	Salmonella	0
	Meat from sheep - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from sheep - minced meat - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	1	0	Salmonella	0
	Meat from turkey - fresh - frozen - Wholesale - Poland - food sample - meat - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from turkey - meat preparation - intended to be eaten cooked - Retail - Lithuania - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	1	Salmonella Kottbus	1
	Meat from turkey - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Meat from turkey - meat products - cooked, ready-to-eat - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Meat, mixed meat - meat preparation - intended to be eaten cooked - frozen - Retail - Latvia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	3	1	Salmonella Infantis	1

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	Meat, mixed meat - meat preparation - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	14	1	Salmonella Infantis	1
	Meat, mixed meat - meat products - cooked, ready-to-eat - Catering - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	1	0	Salmonella	0
			25	Gram	Not Available	16	0	Salmonella	0
	Meat, mixed meat - meat products - cooked, ready-to-eat - Retail - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Meat, mixed meat - minced meat - intended to be eaten cooked - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	14	1	Salmonella Typhimurium, monophasic	1
	Meat, mixed meat - minced meat - intended to be eaten cooked - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	10	Gram	Not Available	9	0	Salmonella	0
	Other food - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Other processed food products and prepared dishes - Catering - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Other processed food products and prepared dishes - Retail - European Union - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	8	0	Salmonella	0
	Ready-to-eat salads - Catering - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	26	0	Salmonella	0
	Ready-to-eat salads - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Ready-to-eat salads - Retail - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	22	0	Salmonella	0
	Spices and herbs - dried - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	4	0	Salmonella	0
	Vegetables - non-pre-cut - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	11	0	Salmonella	0
	Vegetables - pre-cut - Catering - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	4	0	Salmonella	0
	Vegetables - pre-cut - Processing plant - Estonia - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	9	0	Salmonella	0
	Vegetables - pre-cut - Retail - European Union - food sample - Surveillance - based on Regulation 2073 - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	5	0	Salmonella	0
	Vegetables - products - Catering - Finland - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Vegetables - products - Processing plant - Estonia - food sample - Surveillance - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	3	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
ESTONIA	Complementary feedingstuffs - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	14	0	Salmonella	0
	Complementary feedingstuffs - Feed mill - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Complementary feedingstuffs - Processing plant - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for cattle - final product - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	14	0	Salmonella	0
	Compound feedingstuffs for cattle - final product - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for cattle - final product - Farm - Germany - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for cattle - final product - Feed mill - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for pigs - final product - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Compound feedingstuffs for pigs - final product - non-pelleted/meal - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for pigs - final product - non-pelleted/meal - Feed mill - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for pigs - final product - pelleted - Farm - Latvia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for pigs - final product - pelleted - Feed mill - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	3	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - pelleted - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - pelleted - Retail - Lithuania - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for poultry, broilers - final product - pelleted - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Compound feedingstuffs for sheep - final product - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of cereal grain origin - barley derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	2	0	Salmonella	0
	Feed material of cereal grain origin - barley derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of cereal grain origin - maize derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of cereal grain origin - oat derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0

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
ESTONIA	Feed material of cereal grain origin - wheat derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of cereal grain origin - wheat derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of cereal grain origin - wheat derived - Processing plant - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of marine animal origin - fish meal - Farm - Germany - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of marine animal origin - fish meal - Feed mill - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Border inspection activities - Ukraine - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Farm - Lithuania - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Wholesale - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	87	6	Salmonella Mbandaka	6
	Feed material of oil seed or fruit origin - rape seed derived - Wholesale - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	20	3	Salmonella Mbandaka	3
	Feed material of oil seed or fruit origin - soya (bean) derived - Farm - Argentina - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Farm - Estonia - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Farm - Ukraine - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Farm - Ukraine - feed sample - Surveillance - Official sampling - Suspect sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - sunflower seed derived - Border inspection activities - Ukraine - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	0	Salmonella	0
	Other feed material - yeast - Feed mill - Estonia - feed sample - Surveillance - Official sampling - Objective sampling	batch (food/feed)	25	Gram	Not Available	1	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	Bears - wild - Slaughterhouse - Estonia - animal sample - organ/tissue - Surveillance - Official sampling - Census	Not Available	animal	36	6	Trichinella britovi	5
						Trichinella nativa	1
	Pigs - fattening pigs - not raised under controlled housing conditions - Slaughterhouse - Estonia - animal sample - organ/tissue - Surveillance - Official sampling - Census	Not Available	animal	468899	0	Trichinella	0
	Pigs - fattening pigs - raised under controlled housing conditions - Slaughterhouse - Estonia - animal sample - organ/tissue - Surveillance - Official sampling - Census	Not Available	animal	4134	0	Trichinella	0
	Solipeds, domestic - horses - Slaughterhouse - Estonia - animal sample - organ/tissue - Surveillance - Official sampling - Census	Not Available	animal	16	0	Trichinella	0
	Wild boars - wild - Slaughterhouse - Estonia - animal sample - organ/tissue - Surveillance - Official sampling - Census	Not Available	animal	1515	9	Trichinella britovi	8
						Trichinella, unspecified sp.	1

Table Yersinia:YERSINIA 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	Cattle (bovine animals) - unspecified - Farm - Not Available - animal sample - faeces - Clinical investigations - Official sampling - Suspect sampling	Not Available	animal	12	6	Yersinia enterocolitica	6

Table Yersinia:YERSINIA 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	Meat from pig - fresh - Cutting plant - Estonia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	25	Gram	Not Available	250	39	Yersinia enterocolitica - biotype 1A (not pathogenic)	34
								Yersinia enterocolitica - biotype 3	1
								Yersinia enterocolitica - biotype 4	4

FOODBORNE OUTBREAKS TABLES

Foodborne Outbreaks: summarized data

		Outbreak strenght	Weak		
Causative agent	**Food vehicle**	**N outbreaks**	**N human cases**	**N hospitalized**	**N deaths**
Norovirus	Unknown	1	127	0	0
Salmonella Enteritidis	Eggs and egg products	2	4	2	0
	Bakery products	1	2	2	0
	Unknown	2	4	2	0
Salmonella Typhimurium	Bakery products	1	24	2	0
Staphylococcus aureus	Unknown	1	27	2	0
Virus	Unknown	1	12	1	0

Strong Foodborne Outbreaks: detailed data

No data returned for this view. This might be because the applied filter excludes all data.

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	EST2017/FBO/TA-1	General	Unknown	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Canteen or workplace catering	Not Available	Not Available	Not Available	cross contamination	1	127	0	0
Salmonella Enteritidis	Not Available	EST2017/FBO/TA-4	Household	Eggs and egg products	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Household	Not Available	Not Available	Not Available	uncooked food	1	2	0	0
		EST2017/FBO/TA-5	Household	Eggs and egg products	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Household	Not Available	Not Available	Not Available	uncooked food	1	2	2	0
		EST2017/FBO/TA-6	Household	Unknown	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Household	Not Available	Not Available	Not Available	uncooked food or cross contamination	1	2	0	0
		EST2017/FBO/TA-7	Household	Bakery products	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Household	Not Available	Not Available	Not Available	cross contamination	1	2	2	0
		EST2017/FBO/TA-9	Household	Unknown	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Household	Not Available	Not Available	Not Available	uncooked food or cross contamination	1	2	2	0
Salmonella Typhimurium	Not Available	EST2017/FBO/TA-3	General	Bakery products	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Household	Not Available	Not Available	Not Available	cross contamination	1	24	2	0

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
Staphylococcus aureus	Clostridium perfringens	EST2017/FBO/TA-8	General	Unknown	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Canteen or workplace catering	Not Available	Not Available	Not Available	Infected food handler	1	27	2	0
Virus	Not Available	EST2017/FBO/TA-2	General	Unknown	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Canteen or workplace catering	Not Available	Not Available	Not Available	cross contamination	1	12	1	0

ANTIMICROBIAL RESISTANCE TABLES FOR CAMPYLOBACTER

Table Antimicrobial susceptibility testing of Campylobacter coli 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: Estonia

	AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**8**	**2**	**16**	**4**	**2**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**20**	**20**	**20**	**20**	**20**	**20**
MIC	**N of resistant isolates**	**6**	**0**	**0**	**4**	**17**	**8**
<=0.12		10		4			
0.25		3		1			
<=0.5							9
0.5		1		6			
<=1			17		2		
1				6			3
2		2	2	3	2		
4			1			3	
8		3			7	5	1
16					5	1	
>16		1				11	
32					2		1
64					1		5
>64					1		1

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Meat from broilers (Gallus gallus) - carcase

Sampling Stage: Slaughterhouse | Sampling Type: food sample - neck skin | Sampling Context: Monitoring

Sampler: Official sampling | Sampling Strategy: Objective sampling | Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**8**	**2**	**16**	**4**	**2**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.12		1					
<=0.5							1
0.5				1			
<=1			1				
2						1	
4					1		

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Meat from broilers (Gallus gallus) - fresh - chilled

Sampling Stage: Retail | Sampling Type: food sample - meat | Sampling Context: Surveillance

Sampler: Official sampling | Sampling Strategy: Objective sampling | Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Latvia

	AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**8**	**2**	**16**	**4**	**2**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**
MIC	**N of resistant isolates**	**2**	**0**	**0**	**2**	**2**	**1**
<=0.5							1
0.5				2			
<=1			2				
8		1					
>16		1				2	
>64					2		1

ANTIMICROBIAL RESISTANCE TABLES FOR SALMONELLA

Table Antimicrobial susceptibility testing of Salmonella Agona in Pigs - fattening pigs

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1										
0.5														1	
<=1		1						1							
1									1						
<=2													1		
<=4											1				
<=8						1									
16			1									1			

Table Antimicrobial susceptibility testing of Salmonella Anatum in Quails

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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
<=0.5					1										
0.5														1	
<=1		1						1							
1									1						
<=2													1		
<=4											1				
<=8						1									
8			1												
32												1			

Table Antimicrobial susceptibility testing of Salmonella Choleraesuis var. Kunzendorf in Pigs - fattening pigs

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1		1						1							
<=2													1		
<=4											1				
<=8						1						1			
8			1												

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Estonia

	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	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							2								
<=0.03										4					
0.03							1								
0.064							1								
<=0.25				4										1	4
<=0.5					4				2						
<=1		4						4							
1									2					3	
<=2													1		
<=4											4				
4													3		
<=8						4									
8			2												
16			2												
32												1			
64												3			

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: HACCP and own check

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Estonia

	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	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
MIC	**N of resistant isolates**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
<=0.015							4								
<=0.03										5					
0.064							1								
<=0.25				5										1	4
<=0.5					5				2						
0.5														4	
<=1		4						5							
1									3						
<=2													4		
<=4											5				
4			2										1		
<=8						5									
8			3												
32												3			
>32															1
64												1			
>64		1													
>1024												1			

Table Antimicrobial susceptibility testing of Salmonella Derby in Cattle (bovine animals) - unspecified

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Clinical investigations

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**1**	**1**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1										
<=1		1						1							
1									1					1	
<=4											1				
<=8						1									
8			1												
>64													1		
>1024												1			

Table Antimicrobial susceptibility testing of Salmonella Derby in Pigs - fattening pigs

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
MIC	**N of resistant isolates**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**2**
<=0.015							3								
<=0.03										5					
0.03							2								
<=0.25				5										1	3
<=0.5					5				3						
0.5														4	
<=1		3						2							
1									2						
<=2													3		
2		1						2							
<=4											5				
4			1										1		
<=8						4									
8			2												
16			2			1		1							
32												2			
>32															2
64												2	1		
>64		1													
>1024												1			

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

Sampling Stage: Farm

Sampling Type: environmental sample - boot swabs

Sampling Context: Control and eradication programmes

Sampler: Official sampling

Sampling Strategy: Census

Programme Code: AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										1					
<=0.25				1											1
<=0.5					1										
0.5														1	
<=1								1							
1									1						
<=2													1		
<=4											1				
<=8						1									
16			1												
32												1			
>64		1													

Table Antimicrobial susceptibility testing of Salmonella Derby in Meat from pig - fresh

Sampling Stage: Cutting plant

Sampling Type: food sample - meat

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1								1							
2		1													
<=4											1				
4													1		
<=8						1									
16			1												
64												1			

Table Antimicrobial susceptibility testing of Salmonella Dublin in Cattle (bovine animals) - unspecified

Sampling Stage: Farm

Sampling Type: animal sample - organ/tissue

Sampling Context: Clinical investigations

Sampler: Industry sampling

Sampling Strategy: Suspect sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
<=0.03										1					
<=0.25				1											1
0.25							1								
<=0.5					1				1						
0.5														1	
<=1		1													
<=2													1		
2								1							
<=8						1									
8			1												
16												1			
>128											1				

Table Antimicrobial susceptibility testing of Salmonella Dublin in Cattle (bovine animals) - unspecified

Sampling Stage: Farm

Sampling Type: animal sample - organ/tissue

Sampling Context: Clinical investigations

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										1					
<=0.25				1											1
<=0.5					1										
0.5														1	
1									1						
<=2													1		
2								1							
<=4											1				
4			1												
<=8						1									
64												1			
>64		1													

Table Antimicrobial susceptibility testing of Salmonella Dublin in Cattle (bovine animals) - unspecified

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										2					
0.03							1								
0.12							1								
<=0.25				2											1
<=0.5					2				1						
0.5														2	1
<=1		2													
1									1						
<=2													2		
2								1							
4			1					1							
<=8						2									
8			1								1				
16											1	1			
32												1			

Table Antimicrobial susceptibility testing of Salmonella Dublin in Cattle (bovine animals) - young cattle (1-2 years)

Sampling Stage: Farm

Sampling Type: animal sample - organ/tissue

Sampling Context: Clinical investigations

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
0.03							1								
0.064										1					
<=0.25				1										1	1
<=0.5					1				1						
<=1		1													
<=2													1		
2								1							
<=4											1				
4			1												
<=8						1									
32												1			

Table Antimicrobial susceptibility testing of Salmonella Dublin in Meat from bovine animals - carcase

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1		1													
<=2													1		
2								1							
<=4											1				
4			1												
<=8						1									
32												1			

Table Antimicrobial susceptibility testing of Salmonella enterica, subspecies arizonae in Sheep

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1		1						1							
<=2													1		
<=4											1				
<=8						1									
8			1												
32												1			

Table Antimicrobial susceptibility testing of Salmonella enterica, subspecies diarizonae in Sheep

Sampling Stage: Farm

Sampling Type: animal sample - organ/tissue

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										2					
0.03							2								
<=0.25				2										1	2
<=0.5					2				2						
0.5														1	
<=1		2						2							
<=2													2		
<=4											2				
<=8						2									
8			2												
32												1			
64												1			

Table Antimicrobial susceptibility testing of Salmonella enterica, subspecies diarizonae in Sheep

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							18								
<=0.03										23					
0.03							6								
0.064										1					
<=0.25				24										15	22
<=0.5					24				23						
0.5														9	2
<=1		23						23							
1									1						
<=2													24		
2		1						1							
<=4											24				
4			5												
<=8						24									
8			19												
16												1			
32												17			
64												6			

Table Antimicrobial susceptibility testing of Salmonella Enteritidis in Quails

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Clinical investigations

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
<=0.03										1					
<=0.25				1											1
<=0.5					1				1						
0.5							1							1	
<=2													1		
2		1						1							
<=8						1									
8			1												
64												1			
>128											1				

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

Sampling Stage: Farm

Sampling Type: environmental sample - boot swabs

Sampling Context: Control and eradication programmes

Sampler: Official sampling

Sampling Strategy: Census

Programme Code: AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1										1	1
<=0.5					1				1						
<=2													1		
2		1													
4								1							
<=8						1									
8			1								1				
16												1			

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

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Control and eradication programmes

Sampler: Official and industry sampling

Sampling Strategy: Census

Programme Code: AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
<=0.03										1					
<=0.25				1											1
0.25							1								
<=0.5					1				1						
0.5														1	
<=1		1						1							
<=2													1		
<=8						1									
8			1												
32												1			
>128											1				

Table Antimicrobial susceptibility testing of Salmonella Mbandaka in Cattle (bovine animals) - unspecified

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1										
0.5														1	
<=1		1						1							
1									1						
<=2													1		
<=4											1				
<=8						1									
8			1												
32												1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Quails

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.064							1								
<=0.25				1											1
<=0.5					1										
0.5														1	
<=1		1						1							
1									1						
<=4											1				
4													1		
<=8						1						1			
8			1												

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Cattle (bovine animals) - unspecified

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Surveillance

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1										1	1
<=0.5					1										
<=1		1						1							
<=2													1		
2									1						
<=4											1				
<=8						1									
8			1												
64												1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Cattle (bovine animals) - unspecified

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Clinical investigations

Sampler: Industry sampling

Sampling Strategy: Suspect sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Estonia

	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**	**1**	**1**	**0**	**0**
<=0.015							1								
<=0.03										1					
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1		1						1							
<=4											1				
<=8						1									
8			1												
>64													1		
>1024												1			

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

Sampling Stage: Farm

Sampling Type: animal sample - faeces

Sampling Context: Control and eradication programmes

Sampler: Official sampling

Sampling Strategy: Census

Programme Code: AMR MON

Analytical Method:

Country of Origin: Estonia

	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**
<=0.03										1					
0.03							1								
<=0.25				1										1	
<=0.5					1										
0.5															1
<=1		1													
1									1						
<=2													1		
2								1							
<=4											1				
<=8						1									
8			1												
32												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: Estonia

	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	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**
MIC	**N of resistant isolates**	**12**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**1**	**10**	**13**	**0**	**11**
<=0.015							65								
<=0.03										67					
0.03							1								
<=0.25				67										63	56
<=0.5					67				26						
0.5														4	
<=1		6						67							
1									37						
<=2			2										46		
2		28							4						
<=4											66				
4		19	16										8		
<=8						61						37			
8		2	47												
>8							1								
16			2			3						20			
>32															11
64						1							7		
>64		12											6		
128						1									

	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	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**
MIC	**N of resistant isolates**	**12**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**1**	**10**	**13**	**0**	**11**
>128						1					1				
>1024												10			

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: Estonia

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid		Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid		Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	**Not Available**	**Not Available**	**Positive/Present**	**Negative/Absent**	**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**	**Positive/Present**	**Negative/Absent**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
ECOFF	**0.125**	**0.25**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
Lowest limit	**0.064**	**0.25**	**0.064**	**0.064**	**0.5**	**0.25**	**0.12**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
Highest limit	**32**	**64**	**64**	**64**	**64**	**128**	**128**	**128**	**2**	**16**	**16**	**128**
N of tested isolates	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
MIC / **N of resistant isolates**	**21**	**24**	**4**	**4**	**4**	**24**	**4**	**4**	**0**	**0**	**0**	**0**
<=0.015									21			
<=0.03											24	
0.03									3			
<=0.064			20									
<=0.12							19			24		
0.12	3											
0.25	2						1					
0.5	2											
1	8					1						
2	1			3	2	5						
4	3	5			15	4		2				11
8	3	10		1	3	10		2				12
16	2	2				3						1
32		4				1						
64					4							
>64		3										

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: Estonia

	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	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
MIC	**N of resistant isolates**	**24**	**0**	**24**	**24**	**5**	**4**	**0**	**0**	**0**	**3**	**7**	**6**	**0**	**11**
<=0.015							19								
<=0.03										24					
0.03							1								
<=0.25														21	13
0.25							3								
<=0.5									8						
0.5														3	
<=1								24							
1					1		1		15						
<=2													16		
2					5				1						
<=4											20				
4			3	5	4								2		
>4				19											
<=8						19						13			
8			13		10										
>8					4										
16			8								1	4			
>32															11
64						4							4		
>64		24											2		
128											2				
>128						1					1				

	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	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
MIC	**N of resistant isolates**	**24**	**0**	**24**	**24**	**5**	**4**	**0**	**0**	**0**	**3**	**7**	**6**	**0**	**11**
>1024												7			

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

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: 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**	**Positive/Present**	**Negative/Absent**	**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**	**Positive/Present**	**Negative/Absent**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
ECOFF	**0.125**	**0.25**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
Lowest limit	**0.064**	**0.25**	**0.064**	**0.064**	**0.5**	**0.25**	**0.12**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
Highest limit	**32**	**64**	**64**	**64**	**64**	**128**	**128**	**128**	**2**	**16**	**16**	**128**
N of tested isolates	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
MIC **N of resistant isolates**	**2**	**3**	**1**	**1**	**1**	**3**	**1**	**1**	**0**	**0**	**0**	**0**
<=0.015									3			
<=0.03											3	
<=0.064			2									
<=0.12							2			3		
0.12	1											
1	1											
2				1				1				
4		2			2	2						
8						1						3
16	1											
32					1							
64		1										

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

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: 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	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
MIC	**N of resistant isolates**	**3**	**0**	**3**	**3**	**1**	**3**	**0**	**0**	**0**	**2**	**3**	**3**	**0**	**2**
<=0.03										3					
<=0.25														1	1
0.25							3								
0.5														2	
<=1								3							
1									3						
4				3	2										
<=8						2									
8			2		1						1				
16			1												
>32															2
64													1		
>64		3											2		
128						1					2				
>1024												3			

OTHER ANTIMICROBIAL RESISTANCE TABLES

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic - E. faecalis 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:Estonia

	AM substance	Ampicillin	Chloramphenicol	Ciprofloxacin	Daptomycin	Erythromycin	Gentamicin	Linezolid	Quinupristin/Dalfopristin	Teicoplanin	Tetracycline	Tigecycline	Vancomycin
	ECOFF	**4**	**32**	**4**	**4**	**4**	**32**	**4**	**32**	**2**	**4**	**0.25**	**4**
	Lowest limit	**0.5**	**4**	**0.12**	**0.25**	**1**	**8**	**0.5**	**0.5**	**0.5**	**1**	**0.03**	**1**
MIC	**Highest limit**	**64**	**128**	**16**	**32**	**128**	**1024**	**64**	**64**	**64**	**128**	**4**	**128**
<=0.03												1	
0.064												3	
0.12												21	
<=0.5		8								25			
0.5				6									
<=1						4					7		16
1		17		15	23			10	2				
2				3		3		15	1				9
<=4			10										
4					2	5							
8			5	1					7				
16							20		9				
32						1	3		5		4		
64			2						1				
128			7								14		
>128			1			12							
512							1						
>1024							1						

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic - E. faecium 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:Estonia

	AM substance	Ampicillin	Chloramphenicol	Ciprofloxacin	Daptomycin	Erythromycin	Gentamicin	Linezolid	Quinupristin/Dalfopristin	Teicoplanin	Tetracycline	Tigecycline	Vancomycin
	ECOFF	**4**	**32**	**4**	**4**	**4**	**32**	**4**	**1**	**2**	**4**	**0.25**	**4**
	Lowest limit	**0.5**	**4**	**0.12**	**0.25**	**1**	**8**	**0.5**	**0.5**	**0.5**	**1**	**0.03**	**1**
MIC	**Highest limit**	**64**	**128**	**16**	**32**	**128**	**1024**	**64**	**64**	**64**	**128**	**4**	**128**
0.064												23	
0.12												16	
0.25												1	
<=0.5		13							10	40			
0.5				9									
<=1						7					34		36
1		22		12	5			1	8				
2		3		4	8	2		38	5				3
<=4			31										
4		2		7	24	15		1	16				1
<=8							32						
8			9	8	3	7			1				
16						5	7						
32						2	1				4		
128											2		
>128						2							

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
CARBA MON	Meat from bovine animals - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring	Official sampling	food sample - meat	batch (food/feed)	Australia	N_A	4	0
										Estonia	N_A	117	0
										Ireland	N_A	6	0
										Latvia	N_A	8	0
										Lithuania	N_A	1	0
										Paraguay	N_A	1	0
										Poland	N_A	6	0
										United States	N_A	2	0
										Uruguay	N_A	5	0
	Meat from pig - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring	Official sampling	food sample - meat	batch (food/feed)	Denmark	N_A	4	0
										Estonia	N_A	109	0
										European Union	N_A	1	0
										Finland	N_A	3	0
										Germany	N_A	8	0
										Latvia	N_A	2	0
										Poland	N_A	16	0
										Spain	N_A	7	0
	Pigs - fattening pigs	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Slaughterhouse	N_A	Monitoring	Official sampling	animal sample - caecum	slaughter animal batch	Estonia	N_A	68	0
ESBL MON	Meat from bovine animals - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring	Official sampling	food sample - meat	batch (food/feed)	Australia	N_A	4	0
										Estonia	N_A	117	0
										Ireland	N_A	6	0
										Latvia	N_A	8	0
										Lithuania	N_A	1	0
										Paraguay	N_A	1	0
										Poland	N_A	6	0
										United States	N_A	2	0
										Uruguay	N_A	5	0

European Food Safety Authority

Latest Transmission set

Table Name	Last submitted dataset transmission date
Antimicrobial Resistance	21-Nov-2018
Esbl	24-Jul-2018
Animal Population	24-Jul-2018
Disease Status	24-Jul-2018
Food Borne Outbreaks	24-Jul-2018
Prevalence	24-Jul-2018

Table of contents

1. Institutions and Laboratories involved in zoonoses monitoring and reporting

Veterinary and Food Board (VFB)
The Veterinary and Food Board, a governmental agency carrying out its tasks under the government of the Ministry of Rural Affairs, functions as a supervising body and ensures that the requirements of the legislation that governs veterinary, food safety, market regulation, animal welfare and farm animal breeding are followed. The broader objective of VFB is to ensure the consumers the production of safe, healthy and quality raw materials for food, to prevent and eradicate infectious animal diseases, to protect people from diseases common to both people and animals and diseases, which are spread by animals. VFB coordinates the monitoring of zoonoses in Estonia.

Veterinary and Food Laboratory (VFL)
Veterinary and Food Laboratory carries out statutory testing under various farm animal disease surveillance and food safety control programs and laboratory testing of imported and exported animals and relevant goods.

Estonian Agricultural Registers and Information Board (ARIB)
The Estonian Agricultural Registers and Information Board is a governmental institution subordinated to the Ministry of Rural Affairs. One of ARIB's duties is to maintain national registers - the register of farm animals and the register of agricultural support and land parcels. Data on identified farm animals, the places in which they are kept, certified abattoirs and animal waste processing companies is recorded in the register of farm animals. The aims of gathering such data are to prevent and eliminate contagious animal diseases and to protect people from diseases and illnesses shared with and spread by the animals.

Health Board
The Health Board is governmental agency carrying out its tasks under the government of the Ministry of Social Affairs. It is the competent authority for surveillance, prevention and control of communicable diseases in humans, risk analysis in epidemiology, food borne outbreaks investigation.

2. Animal population

1. Sources of information and the date(s) (months, years) the information relates to

Estonian Veterinary and Food Board and Estonian Agricultural Registers and Information Board.
All the figures provided are from December 31, 2017.

2. National changes of the numbers of susceptible population and trends

The data presented in the table includes backyard animals.

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

The highest cattle population density is in the middle-part of Estonia (Järva county) and the biggest pig farm is situated in the Viljandi county. The highest poultry flocks density is in the northern part of Estonia (Harjumaa county).

3. General evaluation: TUBERCULOSIS, MYCOBACTERIAL DISEASES

1. History of the disease and/or infection in the country

Tuberculosis in animals is notifiable since 1962. The last case of bovine tuberculosis in Estonia was detected in 1986. Estonia has regained officially tuberculosis-free member state status in 2010 according to the Commission Decision 2010/695.
Human Tuberculosis Register has been created in 1997. No cases of human tuberculosis caused by *M.bovis* has ever been reported.

2. Evaluation of status, trends and relevance as a source for humans

Since bovine tuberculosis in cattle is eliminated in Estonia, there is no probability of contracting *M.bovis* infection from domestic animals or domestic animal products.

4. Description of Monitoring/Surveillance/Control programmes system: *Mycobacterium* in animals – Cattle (bovine animals) – animal sample

1. Monitoring/Surveillance/Control programmes system

Since the year 2005 according to the State Programme on Monitoring and Surveillance of Animal Infectious Diseases and Council Directive 97/12 all over 24 months old cattle (except fattening bulls who are not used for breeding and will be slaughtered after rearing period) are subject for routine serological testing on tuberculosis at an interval of 4 years. That scheme of investigation ensures that total 100% of herds are tested at an interval of 4 years. Intradermal tuberculin test is performed. Specimens for bacteriological examination are lymph nodes and internal organs.
A positive case is defined as an animal where *Mycobacterium bovis* has been isolated.
Laboratory diagnostic method used in the VFL is performed according to OIE Manual for Diagnostic Tests and Vaccines for Terrestrial Animals. Diagnostic tests are tuberculin skin test and microscopy, histology, culture. Confirmation is performed by biochemical tests and PCR. Method is accredited by the Estonian Accreditation Centre.

2. Measures in place

The State Programme on Monitoring and Surveillance of Animal Infectious Diseases is a national programme approved annually by the Director General of the Veterinary and Food Board. The Ministry of Agriculture Regulation No 61 "Prevention of bovine animals against tuberculosis" (made in accordance with Community legislation) is in force since 2004.
According to the State Programme on Monitoring and Surveillance of Animal Infectious Diseases in total 1/4 of bovine herds should be tested with tuberculin each year.
Vaccination against tuberculosis is forbidden in Estonia.
Veterinary and Food Board apply following restrictions and measures in case of positive findings:
1) declare OTF status invalid,
2) organize epidemiological investigation,
3) ensure that all at least 6 weeks old bovine animals native of tuberculosis positive herds should be tuberculin tested according to the EC Regulation 1226/2002,
4) all in point 3 mentioned tuberculosis positive animals should be slaughtered,
5) 60 days - 6 months after the positive animals are removed from the herd, all bovines over 6 weeks are tested with tuberculin. Positive animals are slaughtered. Testing is carried out at mentioned interval until the herd applies to the requirements of officially tuberculosis free herd,
6) bovine animals could be taken out from the herd only for slaughter,

7) disinfection is required,
8) milk has to be heat treated.

3. Notification system in place to the national competent authority

Infection with *Mycobacterium bovis* is notifiable in bovine animals since 1962 and since 2000 it is notifiable according to the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

According to the State Programme on Monitoring and Surveillance of Animal Infectious Diseases 1/4 of bovine herds were tested with tuberculin in 2017. There were no positive results in 2017.
There is no evidence of contracting tuberculosis from domestic animals. There were no human cases of tuberculosis caused by *M. bovis* reported during years.

5. Additional information

Since the 17th of November 2010 Estonia is declared as officially free of bovine tuberculosis. Estonia has regained officially free member state status according to Commission Decision 2010/695 of 17 November 2010 amending the Annexes to Decision 93/52/EEC as regards the recognition of Estonia, Latvia and the Autonomous Community of the Balearic Islands in Spain as officially free of brucellosis (*B.melitensis*) and amending Annexes I and II to Decision 2003/467/EC as regards the declaration of Estonia as officially tuberculosis-free and officially brucellosis-free as regards bovine herds.

5. General evaluation: BRUCELLOSIS

1. History of the disease and/or infection in the country

The last positive *B. abortus* case in bovine animals has been registered in 1961. *B.melitensis* in goat and sheep had never been reported in Estonia. There were no cases of human brucellosis registered in Estonia since 1957.
As brucellosis has not been detected in production animals during years, the risk of humans obtaining brucellosis from Estonian animal products is negligible.

2. Evaluation of status, trends and relevance as a source for humans

Surveillance programme for brucellosis started in 1962. The last positive case has been recorded in 1961. Since the year 2005 brucellosis surveillance programme has been implemented according to the EC legislation. No human cases registered since 1957.
According to Commission Decision 2010/695 of 17 November 2010 amending the Annexes to Decision 93/52/EEC as regards the recognition of Estonia, Latvia and the Autonomous Community of the Balearic Islands in Spain as officially free of brucellosis (*B. melitensis*) and amending Annexes I and II to Decision 2003/467/EC as regards the declaration of Estonia as officially tuberculosis-free and officially brucellosis-free as regards bovine herds, Estonia has regained officially free member state status. Since 2005 the brucellosis surveillance programme in bovine animals is implemented according to the EC legislation. No official surveillance programmes for Brucella detection in food exists in Estonia.
No human cases were registered during many years, so the situation seems to be stable.

6. Description of Monitoring/Surveillance/Control programmes system: *B. abortus* in animal – Cattle (bovine animals) – animal sample

1. Monitoring/Surveillance/Control programmes system

Sampling is performed in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases - the national programme approved annually by the Director General of the Veterinary and Food Board. Ministry of Agriculture Regulation No 120 "Prevention of bovine animals against brucellosis" is in force since 2004.
Compulsory bacteriological investigation of all abortions with suspicion of brucellosis. All over 24 month old bovines are subject to routine serological testing for brucellosis (except fattening bulls who are not used for breeding, are in separate epidemiological unit and will be slaughtered after rearing period) with interval not exceeding 5 years. 20% of the herds are tested annually.
Dairy cows: milk samples are tested serologically.
Other bovines: blood samples are tested serologically. Bulls at the artificial insemination centres: blood samples are tested serologically once a year. Sampling is performed by the VFB official veterinarians and authorized veterinarians. Samples are taken at farm. Sampling is a part of a permanent monitoring scheme.
Pooled milk samples (10 animals) from cows and pooled blood samples (10 animals) from heifers and bulls are taken. Abortion - fetuses and fetal membranes.
Case definition - an animal from which *B. abortus* has been isolated.
Diagnostic test - serology (indirect ELISA) for monitoring purposes. If samples react positively in screening tests, confirmation is performed by the other serological tests (CFT, CompELISA).For clinical cases (abortion) - microbiological examination for isolation and identification of bacteria. Confirmation is done by biochemical tests and the slide agglutination test and sending Brucella strain to the reference laboratory. Method is accredited by the Estonian Accreditation Centre.
Council Directive of 26 June 1964 on animal health problems affecting Intra-Community trade in bovine animals and swine is applied.

2. Measures in place

Vaccination against brucellosis is forbidden in Estonia.
Veterinary and Food Board apply following restrictions and measures in case of positive findings:
1) declare OBF status invalid;
2) organize epidemiological investigation;
3) all bovine animals and brucellosis susceptible animals in the epidemic point should be culled, Veterinary and Food Board may allow to send clinically healthy animals for slaughter to the appointed slaughterhouse. Slaughter should be performed separately from the other animals. Meat should be heat treated;
4) disposal of carcasses in accordance with Regulation (EC) No 1069/2009;
5) vehicles and animals to the epidemic point and out could be allowed only by authority of the Veterinary and Food Board;
6) disposal of equipment, animal products, waste and other objects which cannot be disinfected and may be contaminated;
7) vehicles which are used for transport of bovines or other susceptible animals or for transport of possibly contaminated objects must be disinfected before and after the transport;
8) milk must be heat-treated before consumption or before using it for feed.

3. Notification system in place to the national competent authority

Infection with Brucella is notifiable in bovine, ovine and swine animals since 1962 and since 2000 it is notifiable according to the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

All analysed samples were negative in 2017.

5. Additional information

According to Commission Decision 2010/695 of 17 November 2010 amending the Annexes to Decision 93/52/EEC as regards the recognition of Estonia, Latvia and the Autonomous Community of the Balearic Islands in Spain as officially free of brucellosis (*B. melitensis*) and amending Annexes I and II to Decision 2003/467/EC as regards the declaration of Estonia as officially tuberculosis-free and officially brucellosis-free as regards bovine herds, Estonia has regained officially free member state status.

7. Description of Monitoring/Surveillance/Control programmes system: *B. melitensis* in animal – Sheep – animal sample

1. Monitoring/Surveillance/Control programmes system

Sampling is performed in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases - the national programme approved annually by the Director General of the Veterinary and Food Board. Ministry of Agriculture Regulation No 16 "Prevention of ovine and caprine animals against brucellosis" is in force since 2008.
Each year 10 % of sheep herds are analysed serologically. Samples are taken from herds with more than 50 sheep. All abortions with brucellosis suspicion are tested bacteriologically.
Individual blood sample is taken for serology. Samples from abortion material, udder secretions or from tissues removed at post-mortem for bacteriology.
Case definition - an animal from which *B. melitensis* has been isolated.
Laboratory diagnostic method used in the VFL is performed according to OIE Manual of Diagnostic Tests and Vaccines. For monitoring purposes serology is used: Rose Bengal Test (antigen produced by VLA), a further test is a Complement Fixation Test For suspected or clinical cases - microbiological examination of isolation and identification of bacteria. Confirmation is performed by biochemical tests and the slide agglutination test and sending Brucella strain to a reference laboratory. Method is accredited by the Estonian Accreditation Centre.

2. Measures in place

Vaccination against Brucella is forbidden in Estonia.
Measures in case of positive findings include notification, investigation of all suspected cases by veterinary authorities by serological testing of blood samples and microbiological testing in case of abortions, isolation of suspect cases and herd restrictions, killing of positive herds and disinfection of the shed, restrictions on use of raw milk for human consumption, dead animals carcasses should be disposed in accordance with the requirements of the Regulation (EC) No 1069/2009.

3. Notification system in place to the national competent authority

Infection with Brucella is notifiable in bovine, ovine and swine animals since 1962 and since 2000 it is notifiable according to the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

There were no positive cases in 2017.

5. Additional information

There were no registered cases of brucellosis in sheep since 1962, the risk of obtaining human brucellosis in Estonia is negligible. Human cases of brusellosis had not be diagnosed during more than 50 years.
According to Commission Decision 2010/695 of 17 November 2010 amending the Annexes to Decision 93/52/EEC as regards the recognition of Estonia, Latvia and the Autonomous Community of the Balearic Islands in Spain as officially free of brucellosis (*B. melitensis*) and amending Annexes I and II to Decision 2003/467/EC as regards the declaration of Estonia as officially tuberculosis-free and officially brucellosis-free as regards bovine herds, Estonia has regained officially free member state status.

8. Description of Monitoring/Surveillance/Control programmes system: *B. melitensis* in animal – Goats – animal sample

1. Monitoring/Surveillance/Control programmes system

Sampling is performed in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases - the national programme approved annually by the Director General of the Veterinary and Food Board. Ministry of Agriculture Regulation No 16 "Prevention of ovine and caprine animals against brucellosis" is in force since 2008.
Each year 10 % of the goat herds and goats over the age 6 months are analysed serologically. Samples are taken from herds with more than 50 goats. All abortions with brucellosis suspicion are tested bacteriologically.
Individual blood sample is taken for serology. Samples from abortion material, udder secretions or from tissues removed at post-mortem for bacteriology.
Case definition - an animal from which *B. melitensis* has been isolated.
Laboratory diagnostic method used in the VFL is performed according to OIE Manual of Diagnostic Tests and Vaccines. For monitoring purposes serology is used: Rose Bengal Test (antigen produced by VLA), a further test is a Complement Fixation Test For suspected or clinical cases - microbiological examination of isolation and identification of bacteria. Confirmation is performed by biochemical tests and the slide agglutination test and sending Brucella strain to a reference laboratory. Method is accredited by the Estonian Accreditation Centre.

2. Measures in place

Vaccination against Brucella is forbidden in Estonia.
Measures in case of positive findings include notification, investigation of all suspected cases by veterinary authorities by serological testing of blood samples and microbiological testing in case of abortions, isolation of suspect cases and herd restrictions, killing of positive herds and disinfection of the shed, restrictions on use of raw milk for human consumption, dead animals carcasses should be disposed in accordance with the requirements of the Regulation (EC) No 1069/2009.

3. Notification system in place to the national competent authority[(c)]

Infection with Brucella is notifiable in bovine, ovine and swine animals since 1962 and since 2000 it is notifiable according to the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

In 2017 there were no positive cases.

5. Additional information

B. melitensis in goats has never been reported. Human cases of brusellosis had not be diagnosed during more than 50 years.
According to Commission Decision 2010/695 of 17 November 2010 amending the Annexes to Decision 93/52/EEC as regards the recognition of Estonia, Latvia and the Autonomous Community of the Balearic Islands in Spain as officially free of brucellosis (*B. melitensis*) and amending Annexes I and II to Decision 2003/467/EC as regards the declaration of Estonia as officially tuberculosis-free and officially brucellosis-free as regards bovine herds, Estonia has regained officially free member state status.

9. General evaluation: SALMONELLOSIS

1. History of the disease and/or infection in the country

Surveillance of salmonellosis in human population is undertaken by the Health Board. Data show that the number of cases of human salmonellosis is decreasing during years and since 2013 it is not the most frequently reported disease in Estonia as it was before. Salmonellosis is still an important zoonotic disease in Estonia. The majority of cases have acquired the infection in Estonia.
The number of foodborne outbreaks, where Salmonella was detected as a causative agent is on the first place among other outbreaks during years, but the number of outbreaks and the number of people involved is decreasing.
Salmonella infection in humans is mostly food borne. In most cases the relevance of human cases to foodstuffs is determined on the basis of epidemiological investigation. The examination is usually complicated due to small quantities of food batches, which are usually already consumed before the examination starts. Transmission from an infected person to person is possible.
Salmonella Enteritidis is the predominant agent discovered in humans during years. *Salmonella* Typhimurium is on the second position among the other serotypes isolated from humans.

2. Evaluation of status, trends and relevance as a source for humans

Surveillance of salmonella in animals, food and feed has been carried out in Estonia for many years. In addition to the surveillance systems, monitoring programmes are conducted and they provide additional epidemiological information.
The State Programme on Monitoring and Surveillance of Animal Infectious Diseases is in place. The data received in the frames of this programme shows that Salmonella is mostly found in pigs. Since 2014 Salmonella investigations of sheep herds were started.
Salmonella was found in 5% of samples of feed materials and feedingstuffs in 2017 (in 2016 – 0,6%, 2015 - 0,7%; 2014 - 0; 2013 - 12,5%; 2012 - 4,8%; 2011 - 5%).

The Estonian Salmonella Monitoring Programme for Food of Animal Origin was started from 2002 and is approved annually by the Director General of the Veterinary and Food Board. Food of animal origin is sampled and analysed according to the requirements of the programme. In addition food samples are taken in the frames of official surveillance programmes of Veterinary and Food Board.
During last years the data received from the monitoring programme and official control shows that the majority of positive samples were pig meat and products thereof.
In 2014 the national survey of the raw cow's milk intended for direct human consumption took place. In the frames of the national survey the samples of raw cow's milk intended for direct human consumption were taken at farm. In addition to that milk filter samples (from the same batch) were taken at farm after milking. In the frames of the survey raw milk that originated from 10 bigger farms, who are selling raw milk for direct human consumption, was tested. Milk taken at farm and milk filter were tested on presence of STEC, *Listeria monocytogenes*, *Salmonella* spp., *Campylobacter* spp. Raw milk was tested additionally on presence of *Staphylococcus aureus*. There were no positive samples of milk and milk products found during years.
The number of human salmonellosis cases is decreasing during last years except year 2016. The predominant causative agent of salmonellosis in humans is *S*. Enteritidis. *S*. Typhimurium is on the second position.

3. Additional information

Surveillance of salmonella in feed, animals and food has been carried out in Estonia for many years. In addition to the surveillance systems, monitoring programmes are conducted and they provide additional epidemiological information. Salmonella monitoring in animals is carried out according to the State Programme on Monitoring and Surveillance of Animal Infectious Diseases. Salmonella monitoring in food of animal origin is performed according to the Salmonella Monitoring Programme in Food of Animal Origin since the year 2002.

10. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in food – Meat from bovine animals – food sample

1. Monitoring/Surveillance/Control programmes system

Random sampling is performed in accordance with the Veterinary and Food Board annual plan as a part of official food control. Targeted sampling is performed in cases of suspicion, consumer complaints and etc.
At slaughterhouse and cutting plant – sampling is performed by the officials of the Veterinary and Food Board according to the Salmonella Monitoring Programme for Food of Animal Origin (SMPF). SMPF comprises analyses of randomly sampled swabs from bovine carcases at slaughterhouse and meat or scrap cuttings from cutting plants. In addition at the slaughterhouses, all carcases with infection suspicions and cattle slaughtered under special conditions should be sampled.
At slaughterhouse - carcase swabs should be taken after inspection of carcases at the final stage of the slaughter line before chilling of the carcase. Two surface samples should be taken from each carcase, each from 700 cm2, altogether 1400 cm2. The first sample should be taken from the inner and outer surface of hind side, including inguinal, altogether from area of 700 cm2. The second surface sample should be taken from the inner and outer surface of thoracic cavity and abdominal cavity in the area of sternum, altogether from area of 700 cm2. Two sterile hydrasponges pre-hydrated in 10 ml of buffered pepton water are used for sampling. Samples are sent to the laboratory as soon as possible and should be marked to enable to identify an animal, stockbreeder and date of sampling. In addition to the monitoring programme, meat is sampled at slaughterhouses according to the official food surveillance sampling plans.
At cutting plants - samples should be taken during meat cutting from production line or any other appropriate site of the cutting plant. In addition, regular sampling of raw material and cuttings at cutting plants or departments is performed according to the official surveillance sampling plans. If appropriate,

crushed meat for heat treated meat products production and raw material for minced meat production for retail establishments are sampled.
At meat processing plant - in the frame of official food control raw material, minced meat, meat preparations and meat products are sampled randomly by the officials of Veterinary and Food Board following the frequencies established in decrees of Director General of Veterinary and Food Board.
According to the official food control sampling plan: at minced meat/meat preparation (incl. raw sausages) plants - raw material is sampled, if not originating from the slaughterhouse of the same establishment; minced meat, meat preparations and meat preparations made from minced meat are sampled (sample consists of 5 subsamples, which are examined individually), at meat products establishments - meat products are sampled regularly.
At retail - in the frame of official food control fresh meat, minced meat, ready-to-eat and not-ready-to-eat products are sampled.
Sample analysed - 10 or 25 g. Number of subsamples is 5.
Case definition - Salmonella positive sample/batch - a sample/batch where *Salmonella* spp. has been isolated or if *Salmonella* spp. was isolated in any of subsamples (minced meat, meat preparations).
Analytical method used - ISO 6579:2003.

2. Measures in place

Animal products should be examined in order to prevent the spread of illness to people and to find out the health status of the herd from which animal products originate. Sampling is performed in the frames of Salmonella Monitoring Programme for Food of Animal Origin, official food surveillance and establishment`s self-control programmes. Regulation of Minister of Agriculture No 39 "Prevention against salmonellosis", which defines what should be done in case of Salmonella finding at any stage.
Salmonella Monitoring Programme for Food of Animal Origin (SMPF) has been established according to the Regulation of Minister of Agriculture No 39 "Prevention against salmonellosis". SMPF started in 2002 and is approved annually by the Director General of the Veterinary and Food Board. Prevention of salmonellosis is based on analyses made in the frames of salmonella monitoring programme, official control plans and establishment`s self-control programmes.
In case of positive Salmonella findings at slaughterhouses and cutting plants, the extent of contamination and its sources should be investigated. Thorough cleaning and disinfection should be carried out and the effectiveness of cleaning procedures should be improved. The infected carcasses should be destroyed or considered as conditionally fit for human consumption and should be destined for heat treatment. At retail: the food or raw material for food should be removed from the market or handling.

3. Notification system in place to the national competent authority

Salmonella detection in food is notifiable since 2000 according to the Infectious Animal Disease Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".
Laboratories investigating the safety and quality of the products of enterprises which handle food of animal origin are required to notify the Veterinary and Food Board about the isolation of pathogens which may cause infectious animal diseases subject to notification or registration or about suspicion of the occurrence of such pathogens in raw food material or products. In addition, such laboratories are obliged to notify the Health Board about isolation of zoonotic agents. Local Veterinary centres notify the local offices of the Health Board about isolation of Salmonella in food.

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

In 2017 Salmonella was detected in 1 bovine carcass swab taken in the frames of Salmonella Monitoring Programme.
The Salmonella Monitoring Programme for Food of Animal Origin 2002-2017 data shows that during years Salmonella was found in bovine carcasses samples very rarely (number of positive samples is

below 1%) and in some years no positive samples were found. Salmonella has been isolated from the samples of fresh bovine meat taken at cutting plants only once (in 2015).

5. Additional information

No one case of human infection was epidemiologically linked to the consumption of bovine meat or products thereof.

11. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in food – Meat from broilers (*Gallus gallus*) – food sample

1. Monitoring/Surveillance/Control programmes system

Salmonella Monitoring Programme for Food of Animal Origin comprises analyses of randomly sampled carcasses at slaughterhouse and meat or scrap cuttings from cutting plants. At slaughterhouses a neck skin sample is taken from 3 broiler carcases belonging to the same batch. Samples are taken immediately after veterinary inspection at the final stage of slaughter line before chilling of carcasses. 1 sample is taken each month. The neck skin samples taken from 3 broiler carcasses are put into sterile sampling container, marked in the way that the flock of origin and sampling date can be identified and sent to the laboratory as soon as possible. In the laboratory the skin sample is taken. The sampling at cutting plant is performed randomly and carried out each month.
According to the official food surveillance sampling plans sampling is performed as follows:
minced meat, meat preparations plants - raw material is sampled, if it does not originate from the slaughterhouse of the same establishment; minced meat, meat preparations and meat preparations made from minced meat are sampled),
meat products establishments - meat products are sampled regularly.
Fresh meat, meat preparations, minced meat, meat products samples are taken also border inspection posts in the frames of border veterinary checks and at retail. The samples are taken randomly, but in case of non-compliance, more stringent checks of consignments of the same origin are carried out.
Targeted sampling is performed in cases of suspicion or consumer complains.
Methods of sampling - according to the Commission Regulation 2073/2005. Number of subsamples taken is 5.
Case definition - according to the Commission Regulation 2073/2005.
Analytical method used - ISO 6579:2003.

2. Measures in place

Salmonella Monitoring Programme for Food of Animal Origin (SMPF) is established according to the Regulation of Minister of Agriculture No 39 "Prevention against salmonellosis". SMPF started in 2002 and is approved annually by the Director General of the Veterinary and Food Board. Prevention of salmonellosis is based on analyses made in the frames of salmonella monitoring programme, official control plans and establishment`s self-control programme.
In case of positive findings in poultry meat at handling establishments, the extent of contamination and its sources should be investigated. Thorough cleaning and disinfection should be carried out. The supervisory official may require the improvement of the effectiveness of cleaning procedures on the establishment. Poultry meat should be destroyed or considered conditionally fit for human consumption and could be destined for manufacturing of heat treated meat products under the supervision of official veterinarian. When salmonella is detected in food placed on the market, the food business operator has the obligation to remove the production with positive Salmonella finding from the market or handling.

3. Notification system in place to the national competent authority

Salmonella detection in food is notifiable since 2000 according to the Infectious Animal Disease Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".
Laboratories investigating the safety and quality of the products on enterprises which handle food of animal origin are required to notify the Veterinary and Food Board about the isolation of pathogens which may cause infectious animal diseases subject to notification or registration or about suspicion of the occurrence of such pathogens in raw food material or products. In addition, such laboratories are obliged to notify the Health Board about isolation of zoonotic agents. Local Veterinary centres notify the local offices of the Health Board about isolation of Salmonella in food.

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

2 samples of fresh broiler meat taken at retail were found to be positive for *Salmonella* spp. in 2017.
These samples were not of Estonian origin.
Data received from Salmonella Monitoring Programme for Food of Animal Origin 2002-2017 and analyses of samples taken in the frames of official control showed that since 2006 Salmonella was not detected in samples taken at slaughterhouse and since 2008 Salmonella was not detected in fresh meat samples taken at cutting plant. The number of positive samples taken at other stages is very small.
In the year 2017 broiler meat was not supposed to be the source of infection in foodborne outbreaks. The relevance of the source of infection in humans to broiler meat and products thereof in most outbreaks is determined on the basis of epidemiological investigation, but not bacteriologically. *Salmonella* Enteritidis is the predominant serovar detected in humans during many years.

12. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in food – Meat from turkey – food sample

1. Monitoring/Surveillance/Control programmes system

Random sampling is performed as a part of official food control at meat processing plants and at retail.
Targeted sampling is performed in cases of suspicion, consumer complaints etc.
Samples taken - fresh meat, meat preparation, meat products.
Methods of sampling and case definition - according to the Commission Regulation 2073/2005.
Number of subsamples taken is 5.
Analytical method used - ISO 6579:2003.

2. Measures in place

As there is no turkey production (no flocks) in Estonia, the sampling is mostly performed at meat processing plants, at retail or at border inspection posts. Sampling is random and is performed in the frames of the official food control.
The food or raw material for food should be removed from the market or handling.

3. Notification system in place to the national competent authority

Salmonella detection in food is notifiable since 2000 according to the Infectious Animal Disease

Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".
Laboratories investigating the safety and quality of the products on enterprises, which handle food of animal origin are required to notify the Veterinary and Food Board about the isolation of pathogens which may cause infectious animal diseases subject to notification or registration or about suspicion of the occurrence of such pathogens in raw food material or products. In addition, such laboratories are obliged to notify the Health Board about isolation of zoonotic agents. Local Veterinary centres notify the local offices of the Health Board about isolation of Salmonella in food.

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

One sample was found to be Salmonella spp. positive in 2017.
The consumption of turkey meat is not traditional in Estonia. There is no turkey flocks in Estonia, so the meat or meat products analysed are not of Estonian origin. It is very difficult to make any evaluation, as the amount of the samples analysed is very small.
Turkey meat and products thereof were not confirmed or suspected as a source of infection in humans.

13. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in food – Meat from pig – food sample

1. Monitoring/Surveillance/Control programmes system

At slaughterhouse and cutting plant - fresh pig meat is sampled by the Veterinary and Food Board officials according to the Salmonella Monitoring Programme for Food of Animal Origin (SMPF) and in the frames of official food surveillance sampling plans. In addition to official monitoring and surveillance, every food business operator has the obligation to take samples in the frames of self-control programmes. SMPF comprises analyses of randomly sampled swabs from pig carcases at slaughterhouse and meat or scrap cuttings from cutting plants. In addition, at the slaughterhouses all carcass with infection suspicions and pigs slaughtered under special conditions should be sampled. Sampling in the frames of official food surveillance is performed randomly.
Salmonella Monitoring Programme for Food of Animal Origin: at slaughterhouse swab samples should be taken after the inspection of the carcases at the final stage of the slaughter line before chilling of the carcase. Two surface samples should be taken from each carcase, each from 700 cm2, altogether 1400 cm2. The first sample should be taken from the inner and outer surface of hind side, including inguinal, altogether from area of 700 cm2. The second surface sample should be taken from the inner and outer surface of thoracic cavity and abdominal cavity in the area of sternum, altogether from area of 700 cm2. Two sterile pre-hydrated with 10 ml of buffered peptone water hydrasponges are used for sampling. The samples are sent to the laboratory as soon as possible. The samples should be marked in order to enable to identify an animal, stockbreeder and date of sampling. At cutting plant samples should be taken during meat cutting from production line or any other appropriate site in the cutting plant. Samples are stored at 0+4C and sent to the laboratory as soon as possible.
At meat processing plant - raw material, minced meat, meat preparations and meat products are sampled randomly in the frame of official food surveillance by the officials of Veterinary and Food Board following the frequencies established in decrees of Director General of Veterinary and Food Board. According to official food surveillance sampling plans: at minced meat, meat preparations (incl. raw sausages) plants - raw material is sampled, if not originating from the slaughterhouse of the same establishment; minced meat, meat preparations and meat preparations made of minced meat are sampled (each sample consists of 5 subsamples, which are examined individually). At meat products establishments meat products are sampled regularly.
At retail - random sampling is performed by the officials of the Veterinary and Food Board in

accordance with the annual plans as a part of official food control.
Targeted sampling is performed in cases of suspicion, consumer complains etc.
Case definition – a sample where *Salmonella* spp. has been isolated. In case of 5 subsamples the sample is considered to be positive, if *Salmonella* spp. was isolated in one of subsamples.
Analytical method used - ISO 6579:2003.

2. Measures in place

Salmonella Monitoring Programme for Food of Animal Origin (SMPF) is established according to the Regulation of the Minister of Agriculture no 39 "Prevention against salmonellosis". SMPF started in 2002 and is approved annually by the Director General of Veterinary and Food Board. Prevention of salmonellosis is based on analyses made in the frames of salmonella monitoring programme, official control sampling and establishment`s self-control programmes.
In case of positive Salmonella findings at slaughterhouses and cutting plants, the extent of contamination and its sources should be investigated. Thorough cleaning and disinfection should be carried out and the effectiveness of cleaning procedures should be improved. The infected carcasses should be destroyed or considered as conditionally fit for human consumption and should be destined for heat treatment. At retail the food or raw material for food should be removed from the market or handling.

3. Notification system in place to the national competent authority

Salmonella detection in food is notifiable since 2000 according to the Infectious Animal Disease Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".
Laboratories investigating the safety and quality of the products of enterprises, which handle food of animal origin are required to notify the Veterinary and Food Board about the isolation of pathogens, which may cause infectious animal diseases subject to notification or registration or about suspicion of the occurrence of such pathogens in raw food material or products. In addition, such laboratories are obliged to notify the Health Board about isolation of zoonotic agents. Local Veterinary centres notify the local offices of the Health Board about isolation of Salmonella in food.

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

2% of samples of pig meat and pig meat products investigated in the frames of surveillance were positive for Salmonella in 2017 (in 2016 – 3,8%, 2015 no positive samples).
According to the Salmonella Monitoring Programme for Food of Animal Origin data pig meat is considered to be the most Salmonella contaminated foodstuff in Estonia. In 2017 1,74% of carcase samples (in 2016 – 3,6%, 2015 - 3,8%; 2014 - 3,1%; 2013 - 4,2%; 2012 - 2,7%; 2011 - 2%; 2010 - 3,6%) and 0,4% of fresh meat samples (in 2016 – 1,6%, 2015 - 1,1%; 2014 - 0,7%; 2013 - 2012 - 0%; 2011 - 0,4% 2010 - 0,8%) were *Salmonella* spp positive. S.Derby was the predominant isolate found.
0,3% of carcase swab samples analysed by food business operators were Salmonella positive (in 2016 – 0,4%, 2015 and in 2014 - 0,8%).
During last years pig meat is found to be more contaminated with Salmonella and is on the first place among other foodstuffs.

5. Additional information

In 2017 there were no food borne outbreaks registered that were associated with consumption of pig meat or products thereof. The predominant Salmonella serotype found in humans was *S*. Enteritidis, S. Typhimurium was on the second position.

14. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in food – Eggs – food sample

1. Monitoring/Surveillance/Control programmes system

Eggs are sampled in case of suspicion or complain and egg products at production plants or at retail are sampled by the Veterinary and Food Board officials in the frames of official food surveillance sampling plans.
Sampling in the frames of official food control is performed randomly. Targeted sampling is performed in cases of suspicion, consumer complains etc.
Sample taken:
Eggs - 5 eggs, sample analysed - 25 g mixture of yolk and white, dried/liquid egg products and ready-to-eat products.
Case definition - a sample where *Salmonella* spp. has been isolated.
Analytical method used - ISO 6579:2003.

2. Measures in place

When Salmonella is detected in samples taken at packaging centres, contaminated eggs can be used for the production of pasteurized products.
When Salmonella is detected in food already present on the market, contaminated food or raw material will be withdrawn from the market or handling.

3. Notification system in place to the national competent authority

Salmonella detection in food is notifiable since 2000 according to the Infectious Animal Disease Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".
Laboratories investigating the safety and quality of the products on enterprises, which handle food of animal origin are required to notify the Veterinary and Food Board about the isolation of pathogens which may cause infectious animal diseases subject to notification or registration or about suspicion of the occurrence of such pathogens in raw food material or products. In addition, such laboratories are obliged to notify the Health Board about isolation of zoonotic agents. Local Veterinary centres notify the local offices of the Health Board about isolation of Salmonella in food.

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

No samples were taken in 2017.
In 2017 one household food borne outbreaks of human salmonellosis were registered, where eggs or egg products were suspected to be the source of infection.

5. Additional information

The Estonian Salmonella Monitoring Programme for Food of Animal Origin 2002-2008 indicated that eggs taken at packaging centres are not contaminated with Salmonella. Since the year 2004 there were no positive egg products samples found in the frames of the monitoring programme. As a result of this eggs and egg products were excluded from the monitoring programme since the year 2008. In 2016-2010 no samples taken in the frames of official control were positive for Salmonella. In 2009 one sample was found to be positive, the serovar detected was *S.* Enteritidis. From time to time food borne outbreaks of human salmonellosis are registered, where eggs and egg products were suspected to be the source of infection.

15. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in animal – Cattle (bovine animals) – animal sample

1. Monitoring/Surveillance/Control programmes system

Surveillance of *Salmonella* in feed, animals and food is carried out for many years in Estonia. In addition to surveillance systems, monitoring programme is conducted, which provide an additional epidemiological information. Sampling is performed in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases, which is approved annually by the Director General of the Veterinary and Food Board.
At farm - to diagnose salmonellosis in cattle on the basis of a clinical picture or pathologic-anatomical findings the faeces samples should be taken from the rectum of animals with the doubt of salmonellosis. Faeces sample weighting at least 20 grams should be taken from the rectum of animals under examination by an individual plastic glove or bag, the inside of which should be turned out then and marked for identification of the sample. The individual faeces samples should be halved at the laboratory. At least 5 grams is necessary for the studies and at least 5 g should be preserved at the temperature 4C until the end of bacteriological studies. The halves under study may be united by five into a pooled sample. If the pooled sample has positive reaction, the animals accumulated under the pooled sample should be examined again on the basis of individual samples. To diagnose salmonellosis in cattle, besides faeces samples, also organ samples should be taken from dead animals. Animals tissue samples of at least 25 grams should be taken from liver, spleen and from lymph nodes in small intestine and caecum area (3-5 pieces), each sample should be placed separately in a new plastic bag and marked for identification of the sample. The organ samples from one animal may be accumulated in an additional package. The organ samples from one animal may be integrated into one sample in the laboratory. The sample should be homogenised and pre-enriched in buffered peptone water. The following samples should be taken from the herd infected by salmonellosis detected during the studies or monitoring:
- individual faeces samples from all cattle over one year old. The samples may be accumulated by five into an additional package;- individual faeces samples from the cattle less than one year old, that have clinical characteristics referring to salmonellosis;
- faeces samples from the cattle without clinical characteristics, breakdown by age groups or keeping groups, samples taken from 5-10 animals are pooled at the laboratory;
- samples of feedingstuffs or their components.

In the frames of official control cattle herds should be examined in the quantities provided by the monitoring plan of the Veterinary and Food Board. Herds should be examined bacteriologically on the basis of faeces samples, taking into account the following proportions: size of the herd - number of animals to be examined:
Number of animals is less than 25 - number of samples is equal to the number of animals,
25-100 animals - 25 samples,
over 100 animals - 30 samples.
From cattle with animals less than one year old, faeces samples should be taken by age groups or keeping groups. Faeces samples taken from 5-10 animals should be united into a pooled sample. In total 1/5 of the herds that market milk outside the farm are tested each year. Herds that market raw milk are tested every year.
To monitor salmonellosis in cattle, herds as well as animals sent to artificial fertilization stations should be examined.

Feed samples:
1) on the enterprises handling feedstuffs the final products shall be studied bacteriologically under the framework of monitoring and self-inspection;
2) from imported feedstuffs official samples shall be taken in the course of random inspection in their storing. Good farming practices and strict biosecurity measures are applied at the holdings.
Case definition - an animal or herd where *Salmonella* spp. is found at least in one of the samples.

Analytical method used - ISO 6579:2003.

2. Measures in place

Vaccination against salmonella in Estonia could only be performed basing on the Veterinary and Food Board approval.
In a herd infected with *Salmonella* the infection sources and spreading ways should be detected and then removed or blocked. To find out the origin of infection, samples on presence of *Salmonella* also from contact farm animals and from feedstuffs should be taken. If any animal has the characteristics of clinical salmonellosis, individual samples should be taken from such animals.
If salmonellosis is diagnosed at farm in animals other than cattle or it is detected in people working at farm, the cattle herds at farms should be examined. In case of diagnosing salmonellosis in cattle, the animals in the herd of origin, which had not been examined for salmonellosis, should be examined or if salmonellosis has been detected in the course of annual monitoring, samples should be taken from the herd of origin. The animal keeper should immediately separate the animals that are clinically ill and *Salmonella* positive from other animals as safely as possible. The separated animals should be subjected to medical treatment if necessary, and the occurrence of Salmonellas should be tested on the basis of individual faeces samples 2 times with 1 month interval until receiving two consecutive negative results, or animals should be sent for slaughter. Animals should be kept inside premises so that they cannot be in contact with the other animals. Only the personnel looking after animals is allowed to stay at farm. When looking after the animals, the personnel should wear appropriate protective clothes and in leaving the livestock premises their footwear should be cleaned thoroughly and disinfected. Animal keeper has to keep records on *Salmonella* studies concerning all farm animals. After sending the animals doubted to be infected or actually infected for slaughter, the livestock premises, bedsteads, feeding stands and keeping tools should be cleaned and disinfected according to the prescriptions of veterinarian. Manure and used litter of cattle should be handled according to the prescriptions of authorized veterinarian so that the spread of salmonella should be prevented. Deratization, disinfection and protection against wild birds should be organized. Dogs and cats access to livestock premises should be precluded.

3. Notification system in place to the national competent authority

Infection with *Salmonella* spp. is notifiable since 2000 according to the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

In 2017 1,1 % of analysed samples taken in the frames of the official control were positive.

16. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in animal – Pigs – animal sample

1. Monitoring/Surveillance/Control programmes system

Surveillance of *Salmonella* in feed, animals and food is carried out for many years in Estonia. In addition to surveillance systems, monitoring programme is conducted, which provide an additional epidemiological information: on the enterprises handling feedstuffs the final products shall be studied bacteriologically under the framework of monitoring and self-inspection; from imported feedstuffs official samples shall be taken in the course of random inspection in their storing. Good farming practices and strict biosecurity measures are applied at the holdings.

Samples are taken in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases, which is approved annually by the Director General of the Veterinary and Food Board. To monitor salmonellosis among pigs, herds as well as animals sent to artificial fertilization stations shall be examined. Herds shall be examined bacteriologically (faeces samples are taken) taking into account the herd size.
Samples are taken from the herds, whose production is sold to the market. In the frames of the official control herds should be examined in the quantities provided by the monitoring plan of the Veterinary and Food Board. Herds should be examined bacteriologically on the basis of copro samples, taking into account the following proportions:
less than 25 animals - number of samples taken equals to the number of animals in the herd;
25-100 animals - 25 samples;
over 100 animals - 30 samples have to be taken.
Faeces should be taken by age groups or keeping groups from fattening pigs less than one year old. Faecal samples are taken from 5-10 animals and should be united into one pooled sample at the laboratory.
Each year 1/5 of the pig herds that market pig meat and have more than 10 pigs are tested.
In order to diagnose salmonellosis in pigs on the basis of a clinical picture or pathologic-anatomical findings the faeces samples should be taken from the rectum of animals with the doubt of salmonellosis. From the rectum of animals under examination a faeces sample (at least 25 grams) should be taken by an individual plastic glove or bag, the inside of which shall be turned out then and marked for identification of the sample. The individual faeces samples should be halved in the laboratory. At least 5 grams is necessary for the studies and at least 5 g should be preserved at the temperature 4C until the end of bacteriological studies. The halves under study may be united by five into a pooled sample. If the pooled sample has positive reaction, the animals accumulated under the pooled sample shall be examined again on the basis of individual samples.
Case definition - herd is considered to be positive if the presence of *Salmonella* spp. is confirmed.
Analytical method used - ISO 6579:2003.

2. Measures in place

Vaccination against salmonella in Estonia could only be performed basing on the Veterinary and Food Board approval.
The infection sources and spreading ways should be found out in a herd infected by salmonellosis and then they should be removed or blocked. In order to discover the origin of infection, samples on presence of salmonellas should be taken also from contact farm animals, while one pooled sample taken from 5-10 animals should be examined, and from feedingstuffs.
If any animal has the characteristics of clinical salmonellosis, individual samples should be taken from such animals.
If salmonellosis is detected at farm in animals other than pigs or it is detected in people working at farm, the herds of pigs at farms should be examined.
In case of diagnosing salmonellosis in a pig, animals in the herd of origin, which have not been examined for salmonellosis, should be examined or if salmonellosis has been detected in the course of annual monitoring, samples should be taken from the herd of origin. The owner should immediately separate the animals that are clinically ill and salmonella positive from other animals as safely as possible. The separated animals should be subjected to medical treatment if necessary and the occurrence of *Salmonella* should be studied on the basis of individual faeces samples 2 times with a one month interval until receiving two consecutive negative results, or animals should be sent for slaughter. Slaughter of clinically healthy, but *Salmonella* positive pigs is performed at the end of the day or the other day in order to separate the positive and negative animals. The slaughter rooms should be cleaned and disinfected after slaughter of the positive animals. Pigs should be kept inside the premises so that they cannot be in contact with other animals. Only the personnel looking after animals are allowed to stay at farm. When looking after the animals, the personnel should wear appropriate protective clothing and when leaving the livestock premises their footwear should be cleaned thoroughly and disinfected.
The owner has to keep records on Salmonella studies concerning all farm animals. After sending the

animals doubted to be infected or actually infected for slaughter, the livestock premises, bedsteads, feeding stands and keeping tools should be cleaned and disinfected according to the prescriptions of veterinarian. Manure and used litter of pigs should be handled according to the prescriptions of authorized veterinarian so that the spread of Salmonella should be prevented. Deratization, disinfection and protection against wild birds should be organized. The access of dogs and cats to livestock premises should be precluded.

3. Notification system in place to the national competent authority

Infection with *Salmonella* spp. is notifiable since 2000 according to the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

In the year 2017 7,6 % of analysed samples taken in the frames of the official control programme were positive.

17. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in animal – Gallus gallus (fowl) – broilers – animal sample

1. Monitoring/Surveillance/Control programmes system

Surveillance of *Salmonella* in feed, animals and food is carried out for many years in Estonia. In addition to surveillance systems, monitoring programme is conducted, which provide an additional epidemiological information: on the enterprises handling feedstuffs the final products shall be studied bacteriologically under the framework of monitoring and self-inspection; from imported feedstuffs official samples shall be taken in the course of random inspection at their storing. Good farming practices and strict biosecurity measures are applied at the holdings.
In accordance with the Infectious Animal Disease Control Act, the annual volume of broiler flocks testing for presence of Salmonella is laid down by the State Program on Monitoring and Surveillance of Animal Infectious Diseases approved annually by the Director General of the Veterinary and Food Board. Instructions for salmonella monitoring in broiler flocks are laid down in the Ministry of Agriculture Regulation No 39 "Prevention against salmonellosis", which also provides guidelines for the prevention and control of salmonella in broilers and for the handling of products originating from suspected or infected birds.
The sampling frame covers all flocks of broilers covered by the scope of Regulation (EC) No 2160/2003 and Regulation 200/2012. 2 pairs of boot swabs are taken 2-3 weeks before slaughter. Flocks of broilers are also sampled on the initiative of the food business operator takes place in accordance with Article 5(3) of Regulation (EC) No 2160/2003 within three weeks before the birds are moved to the slaughterhouse. A sampling carried out by the competent authority may replace the sampling on the initiative of the food business operator. 1/3 of the flocks are tested officially, 2/3 of the flocks are tested by food business operator.
Before slaughter at farm – sampling of faeces, socks/boot swabs 2-3 weeks prior to slaughter,
Day-old chicks - samples from meconium.
Case definition - a flock is considered positive if the presence of *Salmonella* spp. is confirmed.
Analytical method used - ISO 6579:2003.

2. Measures in place

Vaccination against Salmonella in Estonia could only be performed basing on the Veterinary and Food

Board approval.
Sampling is performed in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases, which is approved annually by the General Director of the Veterinary and Food Board and is established according to the Regulation of the Minister of Agriculture No 39 "Prevention against Salmonellosis" and also Commission Regulation No 200/2012.

Day-old chicks:
According to the regulation No 39 the measures in case of positive result are:
epidemiological investigation;
unhatched eggs are destroyed;
rooms and equipment are cleaned and disinfected;
samples for the estimation of disinfection effectiveness are taken, samples have to be negative, if not then cleaning and disinfection is carried out until all samples are negative;
empty period for 2 weeks;
3 days before the end of empty period aerosol disinfection should be carried out.

Before slaughter at farm:
According to the regulation No 39, if *Salmonella* presence is suspected in broiler flocks of *Gallus gallus*, the official veterinarian is obligated to take action to confirm the diagnosis and prevent the spread of the disease. Measures in case of positive results: movement restrictions (humans, birds, vehicles); epidemiological investigation; disinfection (containers, vehicles, equipment in the holding, rooms etc.); manure must be removed as soon as possible, after that the holding is cleaned, washed and disinfected and samples are taken to estimate the quality of cleaning and disinfection. Disposal of manure on the premises of the holding is prohibited. The flock must be slaughtered, carcases processed in accordance with Regulation (EC) No 1069/2009.

3. Notification system in place to the national competent authority

Infection with *Salmonella* spp. is notifiable since 2000 according to the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

In the 2017 one flock was positive, *Salmonella* Derby was found.

5. Additional information

The overall prevalence of Salmonella in broiler flocks has been 0% during years.
S. Enteritidis is the most widespread serotype among humans.

18. Description of Monitoring/Surveillance/Control programmes system: *Salmonella* in animal – *Gallus gallus* (fowl) – breeding flocks, unspecified – animal sample

1. Monitoring/Surveillance/Control programmes system

Sampling is performed in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases, which is approved annually by the General Director of the Veterinary and Food Board and is established according to the Regulation of the Minister of Agriculture No 39 "Prevention against Salmonellosis". Commission Regulation (EU) No 200/2010 of 10 March 2010 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards a Union target for the reduction of the prevalence of Salmonella serotypes in adult breeding flocks of *Gallus gallus* is also followed.
In accordance with the Infectious Animal Disease Control Act, the annual volume of salmonella in breeding poultry testing is laid down by the State Program on Monitoring and Surveillance of Animal Infectious Diseases approved annually by the Director General of the Veterinary and Food Board. Instructions for salmonella monitoring in breeding poultry are laid down in the Ministry of Agriculture Regulation No 39 "Prevention against salmonellosis", which also provides guidelines for the prevention and control of salmonella in breeding poultry and for the handling of products originating from suspected or infected birds.
Day-old chicks - every flock is sampled. Day-old chicks that are weak or dead, litter and dust are sampled as 10 samples per flock/lot.
Rearing period - birds of 4 weeks of age and 2 weeks prior movement (slaughter). Copro and boot swabs are taken. The number of copro samples depend on the size of the flock. The number of boot swabs is 5.
Production period - within 4 weeks after moving to the breeding phase or unit and during 2-3 weeks before the end of the production cycle (before slaughter). Copro samples and sock/boot swabs are taken. The number of copro samples depends on the size of the flock.
Case definition - a flock is considered to be positive if the presence of *Salmonella* spp. is confirmed.
Analytical method used - ISO 6579:2003.

2. Measures in place

Vaccination against Salmonella in Estonia could only be performed based on the approval of Veterinary and Food Board.

Sampling is performed in the frames of the State Programme on Monitoring and Surveillance of Animal Infectious Diseases, which is approved annually by the General Director of the Veterinary and Food Board and is established according to the Regulation of the Minister of Agriculture No 39 "Prevention against Salmonellosis" and also Commission Regulation No 200/2010.

Other preventive measures than vaccination in place:
Feed samples:
1) 5% of the enterprises handling feedstuffs the final products are studied bacteriologically under the framework of monitoring and self-inspection;
2) from imported feedstuffs official samples shall be taken in the course of random inspection during their storing.
Good farming practices and strict biosecurity measures are applied at the holdings.

According to the regulation No 39, if Salmonella presence is suspected in breeding flocks of *Gallus gallus*, the official veterinarian is obligated to take action to confirm the diagnosis and prevent the spread of the disease.
Measures in case of positive results:
1) movement restrictions (humans, birds, vehicles);

2) epidemiological investigation;
3) disinfection (containers, vehicles, equipment in the holding, rooms etc.);
4) manure must be removed as soon as possible, after that the holding is cleaned, washed and disinfected and samples are taken to estimate the quality of cleaning and disinfection. Disposal of manure on the premises of the holding is prohibited;
5) the flock must be slaughtered, carcasses processed in accordance with Regulation (EC) No 1069/2009; 6) hatching eggs must be destroyed in accordance with Regulation (EC) No 1069/2009

3. Notification system in place to the national competent authority

Infection with *Salmonella* spp. is notifiable since 2000 according to the Ministry of Agriculture Regulation No 34" List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

All tests were negative in 2017.

5. Additional information

In 2010-2016 no Salmonella positive breeding flocks were detected in Estonia.

19. General evaluation: CAMPYLOBACTERIOSIS

1. History of the disease and/or infection in the country

Human campylobacteriosis is the most important zoonotic disease in Estonia. Since the year 2013 this disease is on the first position according to the number of registered cases in the country. The number of cases registered is increasing from year to year.
There were 347 human cases of campylobacteriosis registered in the year 2017:
2016 – 382
2015 - 364
2014 - 308
2013 - 385
2012 -268
2011 - 214
2010 - 197.

2. Evaluation of status, trends and relevance as a source for humans

The prevalence of *Campylobacter jejuni* in tested food or samples taken from poultry is low. There was no Campylobacter found in broiler caecal samples taken in 2016 and 2014 in the frames of AMR monitoring performed according to the Commission Implementing Decision 2013/652/EU.
In 2017 29,4% of the fattening pigs caecal samples tested in the frames of AMR monitoring programme were C*ampylobacter* positive (2015 – 39%, one sample was *C.jejuni* positive).
AMR testing of *Campylobacter* spp. isolates is usually performed. The isolates derived from poultry meat are usually fully sensitive to all antimicrobials.
15-19% of isolates derived from pigs were multiresistant. Resistance was observed to streptomycin, tetracycline, ciprofloxacin and nalidixic acid.
The number of foodborne outbreaks caused by *Campylobacter* is stable during years. 1-3 outbreaks caused by Campylobacter are reported per year. *C.jejuni* is the causative agent in most cases.

3. Additional information

Poultry meat is thought to be the most significant source of infection in humans. In most cases the sources of infection were not laboratory confirmed. *C.jejuni* is a predominant isolate in humans during years.

20. Description of Monitoring/Surveillance/Control programmes system: *Campylobacter* in food – Meat from broilers (*Gallus gallus*) – food sample

1. Monitoring/Surveillance/Control programmes system

Neck skin samples are taken at slaughterhouse. Sample was taken from 3 broiler carcases belonging to the same slaughter batch for detection of Salmonella and Campylobacter. Sampling was performed in the frames of national monitoring programme. Samples were taken immediately after chilling, but before further processing such as freezing, cutting or packaging.
Case definition – a sample where Thermofilic Campylobacter was isolated.
Analytical method used - ISO 10272-1:2006.

2. Measures in place

Measures in case of the positive findings or single cases:
The slaughter hygiene should be improved. The farm of birds origin should be informed.

3. Notification system in place to the national competent authority

Campylobacter jejuni is a pathogen subject to registration since 2000 according to the Infectious Animal Disease Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".
Laboratories inspecting the safety and quality of the products on enterprises, which handle food of animal origin are required to register Campylobacter and notify the Veterinary and Food Board about the isolation of pathogens, which may cause infectious animal diseases subject to notification or registration or about suspicion of the occurrence of such pathogens in raw food material or products. Laboratories report quarterly the list of registered pathogens in food to the Veterinary and Food Board.

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

In 2017 8,3% (1 batch) of tested broiler slaughter batches investigated in the frames of Campylobacter monitoring programme was found to be *Campylobacter jejuni* positive (in 2016 – 8,3%, 2015-2013 - 0, 2012 - 12,5%, 2011 - 6,4%, 2010 - 8,5%).

5. Additional information

The occurrence of Campylobacter in fresh broiler meat is close to zero. The prevalent *Campylobacter* specie found is *C. jejuni*.
Most of the human campylobacteriosis cases are foodborne in Estonia and are caused by *C. jejuni.*

21. General evaluation: LISTERIOSIS

1. History of the disease and/or infection in the country

During years the number of laboratory confirmed cases of listeriosis in Estonia has been very low.
There were 4 cases of human listeriosis recorded in the year 2017:
2016 – 9
2015 - 11
2014 – 1
2013 – 2
2012 - 3.
2 deaths were registered in 2016.
No outbreaks involving *Listeria* spp. were reported during years.

2. Evaluation of status, trends and relevance as a source for humans

No Listeria monitoring programme in animals exists in the country. Animals are investigated in the frames of clinical investigations or in case of BSE and rabies analyses give negative results. The number of analysed samples is small In the year 2017 14,3% of samples taken from cattle (in 2016 – 20%; 2015 - 12,5%; 2014 - 27,7%, 2013 - 15,8 %, 2012 - 6,7%, 2011 - 10,8%). Two of three analysed samples (66,7%) taken from sheep were positive (in 2016 – 4,3%, 2015 - 27%; 2014- 37,5%, 2013 - 14,8%; 2012 - 22%; 2011 - 8,3%).
In 2017 the presence of *Listeria monocytogenes* was determined in 4% of ready-to-eat fishery products (in 2016 - -11,6%, 2015 - 6,7%, 2014 - 2,4%, 2013 - 5,1%, 2012 - 4,5%).
In other food products the findings of Listeria is very rear.
In 2014 the national survey of the raw cows milk intended for direct human consumption took place. In the frames of the national survey the samples of raw cows milk intended for direct human consumption were taken at farm. In addition to that milk filter samples (from the same batch) were taken at farm after milking. In the frames of the survey raw milk that originated from 10 bigger farms, who are selling raw milk for direct human consumption, was tested. Milk taken at farm and milk filter were tested on presence of VTEC, *Listeria monocytogenes, Salmonella* spp., *Campylobacter* spp. Raw milk was tested additionally on presence of *Staphylococcus aureus*. In 2014 20% of raw milk samples and 20% of milk filters were positive for *Listeria monocytogenes*.
In 2013 national survey of raw cow's milk intended for direct human consumption taken at farm and at retail (at retail samples were taken from the same batches as at farm) was carried out. 3,2% of raw milk was found to be *Listeria monocytogenes* positive.

3. Additional information

The number of human cases of listeriosis is very small. In all cases *Listeria monocytogenes* has been detected.
Foodborne transmission is believed to be more important than transmission from animals.

22. General evaluation: YERSINIOSIS

1. History of the disease and/or infection in the country

Human cases of yersiniosis are reported in Estonia every year. The number of cases varied during the years.
The peak was mentioned in 1999 (113 cases):
2017 – 43
2016 – 45
2015 – 53
2014 – 62
2013 – 72
2012 – 47
2011 – 69
2010 - 58.
Only few food-borne outbreaks were reported during years: in 2011 1 household outbreak and in 2010 1 household outbreak.

2. Evaluation of status, trends and relevance as a source for humans

There is no special programme for monitoring of *Yersinia* spp. in animals in Estonia. Isolation of Yersinia was usually related to the confirmation of the presence of cross-reacting antibody in case of positive Brucella serological reaction.
2017 12 samples were taken from cattle, 6 were positive for *Y. enerocolitica.*
In 2016 3 samples were taken from cattle with no positive results.
In 2013 5 samples taken from cattle, 40% of them were positive for *Y. enerocolitica*.
In 2012 4 samples taken from cattle were tested. 50% of them were *Y. enterocolitica* positive.
In 2011 no samples were taken from animals and food.
In 2010 no samples taken from cattle were positive. 100% (3 samples analysed) of samples taken from pigs were positive for *Y. enterocolitica*.
In 2009 54% of samples taken from cattle and 25% of the samples taken from pigs were positive for *Yersinia eterocolitica*.
In 2008 17,4% of samples taken from cattle were positive for *Y. enterocolitica*.
In 2007 25% of samples taken from cattle and in 2006 4,7% of samples taken from sheep were positive for *Yersinia enterocolitica*.
As in 2013 in 2017 *Yersinia* monitoring programme in pig meat taken at cutting plants took place. 15,6% of samples taken in the frames of monitoring programme were *Yersinia enterocolitica* positive (in 2013 – 5,7%). Biotype 3 was found in 2,6% of positive samples, biotype 4 in 10,3% of positive samples and biotype 1 in 87,2% of positive samples.
In 2013 meat samples were taken also at retail, 6% of them were *Yersinia enterocolitica* positive.
In 2009-2010 Yersinia monitoring programme in pig meat took place. 108 pig carcass swab samples were taken in 2010 and 80 carcass swab samples were taken in 2009 at slaughterhouses, no positive samples were found.
Both programmes were linked to the Salmonella monitoring programme for food of animal origin.

The number of human cases is unstable and varies during years. A significant part of human infections is of domestic origin.

23. General evaluation: TRICHINELLOSIS

1. History of the disease and/or infection in the country

The data of the previous investigations show that trichinellosis had been diagnosed both in wild and in farmed domestic animals in Estonia. The last case of trichinellosis in domestic pig was diagnosed in 1999. During years there have been no cases of trichinellosis found in farmed animals.

There are still cases of trichinellosis in wild animals diagnosed each year. Most affected are wild boars.

Human trichinellosis is relatevely rare disease in Estonia. The peak of incidence was noted in the year 1993, when 43 human cases of trichinellosis were diagnosed. Since that time the number of human cases per year is close to zero:
2017-2016 – 0
2015 - 2 cases
2014 – 0
2013 – 1
2012 -2010 – 0
2009 - 1.

2. Evaluation of status, trends and relevance as a source for humans

Animals carcases (swine, horse, wild game and etc.) are sampled systematically at slaughterhouses as a part of the post-mortem examination.
In most human cases the supposed source of infection is associated with consumption of wild animals meat.

24. Description of Monitoring/Surveillance/Control programmes system: *Trichinella* in animal – Solipeds, domestic – horses – animal sample

1. Monitoring/Surveillance/Control programmes system

All slaughtered animals intended for human consumption are sampled. Sampling is performed according to the requirements of the Commission Regulation 2015/1375.
Carcasses are sampled at the slaughterhouse. Sampling is performed by authorized or official veterinarians at post-mortem inspection.
Specimens are to be taken from the lingual or jaw muscle. In case of their lacking, a specimen is to be taken from a pillar of the diaphragm at the transition to the sinewy part.
Case definition - an animal where *Trichinella* spp. was detected.

2. Measures in place

Each carcase should be examined at post-mortem inspection in accordance with the Commission Regulation 2015/1375.

3. Notification system in place to the national competent authority

Notification is in place since the year 2000 according to the Regulation of the Minister of Agriculture No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

In 2016 no positive cases were reported.
No Trichinella is found in horses during years. The number of slaughtered horses is not very big (max 25 horses per year), as there is no tradition of horse meat consumption in Estonia.

25. Description of Monitoring/Surveillance/Control programmes system: *Trichinella* in animal – Pigs – animal sample

1. Monitoring/Surveillance/Control programmes system

Samples are taken at slaughterhouse. Sampling is performed by authorized or official veterinarians at post-mortem inspection in accordance with the Commission Regulation 2015/1375.
Each slaughtered pig has to be examined at slaughterhouse at post-mortem inspection. Minimum 10% of the pigs that originate from the holdings that are applying controlled housing conditions are examined at the slaughterhouse.
In case of the whole carcasses, a specimen is to be taken from pillar of the diaphragm at the transition to the sinewy part. In the absence of both diaphragm pillars, a specimen is to be taken from the rib part or breastbone part of the diaphragm or from the jaw muscle, tongue or abdominal muscles tongue muscle or the jaw muscle, abdominal muscle. For cuts of meat and frozen samples, a sample of striated muscle is to be taken.
Case definition - an animal where *Trichinella* spp. was detected.

2. Measures in place

By the end of the year 2017 there were 22 officially recognized holdings that are applying controlled housing conditions (2016 – 12).
Carcasses do not leave the premises before the result of the *Trichinella* examination is found to be negative.
In case of Trichina larvae discover, the animal carcase and the viscera are declared to be unfit for human consumption and should be directly disposed in accordance with the requirements of the Regulation 1069/2009.

3. Notification system in place to the national competent authority

Notification is in place since the year 2000 in accordance with the Regulation of the Ministry of Agriculture No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

No positive cases in pigs were reported during years.
Investigations show that during years no *Trichinella* spp. was found in domestic farmed animals. At the same time trichinellosis was diagnosed in wild animals: wild boars, lynxes and bears. The risk of acquiring human trichinellosis from domestic animals is considered to be close to zero as *Trichinella* has not been detected in farmed animals that are usually consumed as food in Estonia.

5. Additional information

The last case of trichinellosis in pigs was discovered at the private farm in the year 1999. Since that time no *Trichinella* spp. has been found in domestic pigs.
The risk of contracting trichinellosis from domestic pigs is close to zero due to the extensive surveillance programmes of pig production in place.

26. General evaluation: ECHINOCOCCOSIS

1. History of the disease and/or infection in the country

There were no reported cases of echinococcosis in farmed animals in the years 2017-2008 and 2006-2004.
In 2007 one case of liver ehhinococcosis was registered in cattle.
In 2005 2 cases of echinococcosis in wild moose had been diagnosed at post-mortem inspection.
The number of human cases registered is cloze to zero (0-3 cases per year). Human echinococcosis is a very rear disease in Estonia. The situation is stable and the risk for humans to acquire the disease is negligible.

2. Evaluation of status, trends and relevance as a source for humans

Surveillance and control of *Echinococcus* spp. is carried out by the meat inspectors according the the Regulation 854/2004. Mandatory meat inspection covers all known potential intermediate host species. All carcasses intended for human consumption are inspected for incidence of hydatid cysts.
The prevalence of Echinococcus in animals intended for human consumption is close to zero.
Human echinococcosis is not a public health problem in Estonia.

27. General evaluation: RABIES (LYSSAVIRUS)

1. History of the disease and/or infection in the country

As Estonia complies with the conditions of OIE Terrestrial Animal Health Code, in 2013 Estonia self-declared its recovery of rabies-free status.
Rabies was widely spread all over Estonia which area is 45 227 km. Estonia borders Latvia on the south and Russia on the east, the frequency of rabies infections was also high in these countries. Rabies is still widespread in Russia, including Russian Federation areas bordering Estonia in south-east.
In Estonia rabies originated from wildlife and its main reservoir were red foxes and raccoon dogs. Fully reliable statistical data about rabies cases in animals are available from 1950. There was an urban rabies period in 1950 - 1959, when rabies was diagnosed mainly in domestic animals. Therefore, compulsory vaccination program of dogs and cats was started in 1953. In 1962 - 1967 there was rabies-free period. From 1968 sylivatic rabies cases have been diagnosed in wild and domestic animals in Estonia. The structure of rabies infections across species has been relatively stable in years of epidemic.
First large-scale oral vaccination programme started in autumn 2005. Since that time the number of infections of farm animals has significantly decreased in bovines from 15 cases registered in 2004 and 19 cases in 2005 to no cases of infection registered in 2008 -2017.
In the dogs and cats category, the occurrence of rabies had similar tendency to decrease: from 20 cases registered in 2004 to 0 cases in 2007, 1 case in 2008 and 0 cases in 2009-2017. This may be due to the improved awareness of pet owners, who vaccinate their cats alongside dogs.

Wild animals: In 2016-2012 and 2010 there were no positive cases. In 2011 rabies was diagnosed in raccoon dog near the border of Russia (in Põlva county, near Värska). 3 cases were registered in red fox in summer 2009 near Russian border. The last mortal case of rabies in humans was registered in Estonia more than 20 years ago.
The number of animal attacks of humans is high and increased continuously over the years 1999 - 2003 with the peak in the year 2003 (4436). After the year 2003 there is noted a significant decrease in the number of attacks.

2. Evaluation of status, trends and relevance as a source for humans

Rabies was widely distributed in all counties in Estonia, even in the islands Hiiumaa and Saaremaa. During the years 2001-2003 the number of rabies cases among animals was growing very quickly, being 167 in 2001, 422 in 2002 and in year 2003 the numbers made a sad record - 814 rabies cases were diagnosed.
Thus the oral vaccination program of wildlife was performed in 2004 for the first time on the small island named Vormsi (about 100 square km). Vaccination was performed 2 times a year. After that in autumn 2005 the oral vaccination programme in the frames of Transition Facility program started. The decrease in number of cases has been noted since the year 2004: 2017 -2012 - 0, early 2011- 1, 2010 - 0, 2009- 3, 2008 - 3, 2007 - 4, 2006 - 114, 2005 - 266, 2004 - 314, 2003 - 814.

3. Any recent specific action in the Member State or suggested for the European Union

The oral vaccination program of wildlife in the frames of Transition Facility program started in autumn 2005 (10.10.2005- 3.11.2005), when the Northern part of the country was covered.
Since the year 2006 the oral vaccination of wildlife is performed twice per year (in spring and autumn). 2006-2010 the oral vaccination of wildlife was performed on the whole territory of the country.
Since the year 2011 the vaccination is carried out only in the buffer zones (20-50 km from the border). Starting from year 2015 ORV is performed only in areas bordering Russian Federation. The investigations show a significant decrease in number of positive cases among animals and in number of attacks of humans by animals.

4. Additional information

The investigations show a significant decrease in number of positive rabies cases among animals and in number of attacks of humans by animals due to the oral vaccination of wild animals on the whole territory of the country. The oral vaccination of wildlife shows a significant decrease in number of positive cases registered in animals. As Estonia complies with the conditions of OIE Terrestial Animal Health Code, in spring 2013 Estonia self-declared its recovery of rabies-free status and succeeded to preserve it until nowadays.
The risk of contracting rabies in Estonia is very small, as it was some years ago, due to the vaccination programme of wild animals and mandatory vaccination of cats and dogs in the country.
There are still a lot of human cases of injury from animals every year, but remarkable decrease tendency can be noticed. No transmission of rabies to humans has been recorded.
People being in contact with wild animals in Estonia should be aware of the risk.

28. Description of Monitoring/Surveillance/Control programmes system: Lyssavirus (rabies) in animal – Dogs – animals sample - brain

1. Monitoring/Surveillance/Control programmes system

According to the Regulation of Minister of Agriculture No 67 "Rules for Rabies Prevention" all animals with rabies suspicion or an animal who has been bitten by an animal with rabies suspicion or in unknown state

of health, the authorized veterinarian, who services the region, is obliged to check the state of the animal as soon as possible. The sample should be taken and sent to the laboratory. Necessary measures to prevent the spread of infection should be provided.
Rabies is diagnosed on the basis of clinical symptoms and in the laboratory by determination of the virus antigens from tactile preparations made from brain tissue by immunofluorescence method or by the isolation of the virus from brain tissues of an infected animal in cell cultures or by PCR test.
In case receiving the information about an animal with the suspicion to be infected with rabies or an animal who has been bitten by animal with rabies suspicion or in unknown state of health, the authorized veterinarian, who services the region, is obliged to check as soon as possible the state of the animal and to take necessary measures to prevent the spread of infection.
The brain of the animal or its head (in case of small animals the whole carcass) is sent to the laboratory for analysis. If the brain is damaged, the cervical vertebrae together with the spinal cord have to be sent for analysis.
Case definition - Clinical diagnosis with laboratory confirmation.
Laboratory criteria for diagnosis: detection by direct fluorescent antibody of viral antigens in the brain, if FAT with negative or suspicious result and had a contact with unvaccinated animal or person: additional testing by CC and RT-PCR follows isolation (inoculation in cell culture) of rabies virus from brain tissue or/and-detection of rabies nucleic acid in brain tissue (heminested PCR).
Analytical method used - Fluorescent Antibody Test (FAT) on smears from hippocampus or medulla oblongata.

2. Measures in place

Each animal with rabies suspicion should be examined.
Vaccination of cats and dogs:
Vaccination of dogs and cats is obligatory and free of charge in Estonia.
The animal keeper has to guarantee that his or her cats and dogs are vaccinated. The first vaccination of dogs and cats takes place when the animal is 3 months old and the second vaccination - at the age of 12 months. Further on, the animal is vaccinated minimum once in two years. At least 30 days has to pass from the vaccination of a hunting dog before it is taken to the forest or placed into the circumstances where it can meet a wild animal. Animals are vaccinated by the veterinary supervisory officials, authorized veterinarians or licensed veterinarians. The veterinarian keeps record of the vaccinations against rabies and reports to the Veterinary and Food Board according to the rules established by the Director General of the Veterinary and Food Board. The veterinarian issues a certificate after animal vaccination at animal keeper request or makes an appropriate entrance on the animal registration document. The animal keeper is obliged to present the vaccination certificate or the registration document with the appropriate entrance to the veterinary supervisory official or the authorized veterinarian at request. If the veterinarian finds out that a cat or a dog is not vaccinated or that more than 24 months have passed from its vaccination, the animal has to be vaccinated as soon as possible.
Rabies in Estonia originates from wildlife and its main reservoirs are red foxes and raccoon dogs. The oral vaccination programme of wildlife started in autumn 2005 in the frames of Transition Facility Programme, when bait drop area covered only the Northern part of Estonia. From 2006 until 2010 the vaccination covered the whole territory, since 2011 the vaccination is done only in bordering areas with Latvia and Russia, since 2015 with Russian Federation. Vaccination of wild animals will be performed until threat to be re-infected via migration of infected wildlife persists. The decrease in number of positive cases registered is remarkable. There were no rabies cases registered in dogs in 2017-2009.
If rabies is diagnosed in a cat or a dog on the basis of clinical symptoms or if the animal keeper cannot ensure safe isolation of the animal or the animal keeper cannot be identified, the veterinary supervisory official prescribes compulsory slaughter of the animal. The appropriate slaughter of the animal is arranged by the veterinary supervisory official. If rabies is not confirmed within 14 days, the veterinary supervisory official or the authorized veterinarian can release the animal from isolation after animal`s examination and if necessary, its vaccination. The cat or dog with rabies or rabies suspicion has to be slaughtered without damaging its head. The veterinary supervisory official or the authorized veterinarian has to take samples from the slaughtered animal, also from the animal who has died during the isolation period and to send these samples to the laboratory. After the sample for analysis has been taken the

carcass of the animal has to be burnt. If rabies is diagnosed in one animal of the herd the authorized veterinarian has to examine all other animals in the herd in order to find typical clinical symptoms of rabies or animals with traces of bites. The veterinary supervisory official has to issue an order for compulsory slaughter of all animals infected with rabies. After having taken samples, the carcass of the animal has to be burnt immediately or buried pursuant to the prescriptions of the veterinary supervisory official. The animals with the suspicion of rabies have to be isolated for at least 14 days into an area surrounded by barriers or into a separate closed room pursuant to the orders of the veterinary supervisory official or the authorized veterinarian. If the infection source is not known, the authorized veterinarian or the veterinary supervisory official can order to vaccinate the rest of the animals in the herd. The herd has to remain under the supervision of the local authority of the Veterinary and Food Board for at least 30 days. The animal keeper is obliged to notify the authorized veterinarian about all health disturbances of the animals. Restrictions for the herd are established and abolished by the head of the local authority of the Veterinary and Food Board in a written form. Wild animals with suspicious behaviour should be slaughtered pursuant to the orders of the veterinary supervisory official or the authorized veterinarian without damaging the animals head and samples should be sent to the laboratory. After samples have been taken the carcass of the wild animal has to be burnt or buried pursuant to the prescription of the veterinarian.

3. Notification system in place to the national competent authority

Rabies is a notifiable disease since 1950 and since 2000 it is notifiable according to the Regulation of the Minister of Agriculture No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

Vaccination of dogs and cats is obligatory and free of charge in Estonia.
A decrease in the number of dog bites can be noticed from year to year. In 2017 827 dog bites were registered (in 2016 – 894, 2015 - 900, 2014 - 1343, 2013 - 1009, 2012 - 1115).

5. Additional information

Rabies in Estonia originates from wildlife and red foxes and raccoon dogs are its main reservoir. Thus the oral vaccination of wild animals started in the year 2005 and will be performed each year (in spring and autumn). Vaccination of wild animals will be performed until threat to be re-infected via migration of infected wildlife persists.

29. General evaluation: CYSTICERCOSIS, TAENIOSIS

1. History of the disease and/or infection in the country

Cysticercosis is very rare disease in animals in Estonia. No cases of Cysticerci of *Taenia saginata* and *Taenia solium* were reported during years.

30. Description of Monitoring/Surveillance/Control programmes system: Cysticercus in animal

1. Monitoring/Surveillance/Control programmes system

All slaughtered animals intended for human consumption are examined visually at post-mortem inspection at slaughterhouses.
Case definition – a sample (liver) or carcass, where *Cysticercus* spp. was detected.
Analytical methods used - visual examination, microscopy

2. Measures in place

In case of detecting of Cysticerci the animal carcass or organs are declared as unfit for human consumption.

3. Notification system in place to the national competent authority

Cysticerci detection in food and in animals is notifiable since 2000 according to the Infectious Animal Disease Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".
Laboratories investigating the safety and quality of the products on enterprises, which handle food of animal origin are required to notify the Veterinary and Food Board about the isolation of pathogens which may cause infectious animal diseases subject to notification or registration or about suspicion of the occurrence of such pathogens in raw food material or products. In addition, such laboratories are obliged to notify the Health Board about isolation of zoonotic agents. Local Veterinary centres notify the local offices of the Health Board about isolation of zoonotic agents in food and animals.

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

No cases of Cysticerci of *Taenia saginata* and *Taenia solium* were reported in 2017.

31. General evaluation: TOXOPLASMA

1. History of the disease and/or infection in the country

Data concerning human cases of toxoplasmosis is available since 1997.
The number of human cases of toxoplasmosis varies during years. The highest incidence rate was detected in 2004 when 16 cases were registered.
Since that time there is a decrease tendency in number of human cases of toxoplasmosis and the number of registered cases is close to zero (0-6 cases per year).
No special programme is present on monitoring of toxoplasmosis in animals.

2. Evaluation of status, trends and relevance as a source for humans

There is no official programme for Toxoplasma monitoring in animals.
Animals are investigated in case of suspicion.
Blood samples are tested on presence of Toxoplasma antibodies.
There is no enough information about the most common sources of infection.

32. General evaluation: VEROTOXIGENIC *E. COLI* (STEC)

1. History of the disease and/or infection in the country

The number of human cases is not very significant. All of them were autochthone cases and all were laboratory confirmed. There were 3 human cases registered in 2017:
2016 – 5
2015 – 8
2014 – 6
2013 – 8
2012 – 3
2011 – 4
2010 – 5.
There were no outbreaks registered in Estonia due to VT *E.coli*.

2. Evaluation of status, trends and relevance as a source for humans

The number of positive animals/herds is very small during years.
In 2017 no samples were analysed.
Samples analysed in 2016 and in 2015 were negative.
In 2014 1 cattle herd was positive for E.coli O157:H7.
In 2013 no positive samples taken from animals were found.
In 2012 1 sample (2 animals) taken from cattle was positive for E.coli O157:H7.
In 2011 4 cattle from 2 different herds were positive.
No positive cases were found in 2010 and in 2007.
One positive animal was detected in 2009, as in 2008.
In 2006 VTEC O157 was detected in dairy cows on 1 small farm with 17 animals. The investigation of those animals was started due to the VTEC human case linked to the consumption of raw cow's milk from that farm. Samples taken from 13 animals were found to be positive.
In 2011 the VTEC O157 monitoring programme in cattle at slaughterhouses started. 3,6% of the hide swabs taken in the frames of the VTEC O157 monitoring programme were positive in 2013 (in 2012 - 5,3%, in 2011 - 3,3%). In 2015 bovine meat taken at cutting plant and sheep carcass swabs taken at slaughterhouse were analysed. 8,6% of sheep carcass swabs were STEC positive and 3,9% of bovine meat samples were STEC positive.
In 2013 - 2014 raw milk intended for direct human consumption taken at farm and milk filters taken at farm were tested. In 2014 7,5% of raw cow's and goats milk samples were positive and 20% of milk filters, in 2013 in 7 cases VTEC was found. No other food samples have been detected as positive since the year 2006.
In 2009 - 2010 VTEC O157 monitoring programme in pig and cattle meat took place. Meat samples were taken at cutting plant. All meat samples taken from pigs and cattle in the frames of VTEC O157 monitoring programme in 2010 and in 2009 were negative.
In 2016 only 4 food samples were analysed. In one sample vtx-1 gene was found.
In 2017 a few samples were analysed, no STEC was found.

3. Any recent specific action in the Member State or suggested for the European Union

Farm animals are tested in the case of suspicion. In 2014 monitoring programme of cattle at farm took place. In 2009-2010 the monitoring programme of VTEC O157 in food of animal origin took place. It was linked to the Salmonella Monitoring Programme for Food of Animal Origin. Samples were taken at cutting plants from the fresh pig and bovine meat cuts. As the results were negative, in 2011 the programme was changed and cattle hide swabs were taken at slaughterhouse in 2011-2013. In 2013-2014 raw cow's milk was investigated. In 2015 bovine meat taken at cutting plant and sheep carcase swabs taken at slaughterhouse were analysed.

33. Description of Monitoring/Surveillance/Control programmes system: Verotoxigenic *E. coli* (STEC) in animal – Cattle (bovine animals) – animal sample

1. Monitoring/Surveillance/Control programmes system

There is no official monitoring programme. Animals are tested in case of suspicion.
Case definition - a herd from which STEC has been isolated.
Analytical method used - ISO 16654:2001.

2. Measures in place

In case of positive laboratory result biosecurity measures should be applied at the farm.

3. Notification system in place to the national competent authority

Verotoxigenic *E.coli* detection is notifiable in animals and food since the year 2000 according to the Infectious Animal Disease Control Act and the Ministry of Agriculture Regulation No 34 "List of Notifiable Diseases and Diseases subject to Registration".

4. Results of investigations and national evaluation of the situation, the trends and sources of infection

No samples were tested in 2017.

34. Food-borne Outbreaks

1. System in place for identification, epidemiological investigations and reporting of food-borne outbreaks

Foodborne infections are registered in Estonia in the same way as infectious diseases (priority list). There is reporting system in place, where clinicians, mainly family physicians reporting cases of foodborne outbreaks to the local Public Health Service. The local Public Health Service is responsible for the investigation of foodborne disease outbreaks. Investigation procedures include epidemiological investigations, food sampling, diagnostic laboratory assays.
Under the regulation of Ministry of Social Affairs No 99 (in force since 2003) local offices of the Health Board provide obligatory information to the Veterinary and Food Board local Services (VFB) about all cases of zoonoses diagnosed in humans (standard form).
Zoonoses reported: Brucellosis, Echinococcosis, Campylobacter enteritis, Cryptosporidiosis, Leptospirosis, Rabies, Salmonellosis, Antrax, Trichinellosis, Tuberculosis (Mycobacterium bovis), Tularemia.
The HB and VFB share monitoring data on zoonoses at the local level on a monthly basis, but there is a daily/immediate contact if needed and a system in place for information exchange on outbreaks investigation.

2. Description of the types of outbreaks covered by the reporting

Definition of outbreaks: Outbreak - an incident in which 2 or more persons experience a similar illness after ingestion of the same food, or after ingestion of water from the same source, and where

epidemiological evidence implicates the food or water as the source of the illness. Household outbreak - an outbreak affecting 2 or more persons in the same private household not apparently connected with any other case or outbreak.

3. National evaluation of the reported outbreaks in the country

There were 9 outbreaks registered in 2017, that affected 200 people. 5,5% of the affected people were hospitalized (2016 – 14%, 2015 - 80%, 2014 - 83,3%, 2013 - 3,9%, 2012 - 27). During years the predominant outbreaks causative agent in Estonia is *Salmonella* spp (mainly *S.*Enteritidis) and on the second place is *Campylobacter* spp.
In 2017 6 outbreaks were caused by *Salmonella* spp., 1 by Norwalk virus, 1 by unknown virus, 1 by *Staphylococcus* spp. and *Clostridium perfringens*.
The number of outbreaks is stable during last years (2016 – 6, 2015 - 6, 2014 - 6, 2013 - 14, 2012 – 17 outbreaks registered).
There were no lethal cases registered during years. Clinical picture for diarrhoeal diseases - diarrhoea, abdominal pain, vomiting, fever, anorexia, dehydration may be sever. Occasionally - complications in different body systems.

35. Institutions and laboratories involved in antimicrobial resistance monitoring and reporting

Veterinary and Food Board (VFB)
The Veterinary and Food Board, a governmental agency carrying out its tasks under the government of the Ministry of Rural Affairs, functions as a supervising body and ensures that the requirements of the legislation that governs veterinary, food safety, market regulation, animal welfare and farm animal breeding are followed. The broader objective of VFB is to ensure the consumers the production of safe, healthy and quality raw materials for food, to prevent and eradicate infectious animal diseases, to protect people from diseases common to both people and animals and diseases that are spread by animals. VFB coordinates the monitoring of zoonoses and antimicrobial resistance monitoring in Estonia.

Veterinary and Food Laboratory (VFL)
Veterinary and Food Laboratory carries out statutory testing under various farm animal disease surveillance and food safety control programs and laboratory testing of imported and exported animals and relevant goods.

36. General Antimicrobial Resistance Evaluation

1. Situation and epidemiological evolution (trends and sources) regarding AMR to critically important antimicrobials (CIAs) over time until recent situation

Salmonella spp., *Campylobacter* spp. isolates derived from foodstuffs and animals are tested for antimicrobial resistance and the isolates are coming from samples that are collected in the frames of monitoring or surveillance programmes. Also *E.coli, Enterococcus faecalis and Enterococcus faecium*, presumptive ESBL/AmpC and carbapenemase producing *E.coli* isolates are tested in the frames of AMR monitoring according to the Commission Implementing Decision 2013/652
AMR monitoring in Estonia is wider than is prescribed by the Decision 20132/652.

The number of isolates received is usually not so big.
In 2017 11 *Salmonella* spp. isolates derived from food and 50 isolates derived from animals were tested in the frames of the Estonian Antimicrobial Resistance Monitoring of Zoonotic Agents. AMR testing was performed by the Veterinary and Food Laboratory.
78% of tested Salmonella isolates derived from animals were fully sensitive (in 2016 – 92,3%, 2015 - 93,5%, 2014 - 81,6%, 2013 - 45,2%, 2012 - 59,4%, 2011 - 78,6%).
90,9% of tested Salmonella isolates derived from food were fully sensitive (in 2016 – 81,8%, 2015 - 76,9%, 2014 - 80%, 2013 - 57,1%, 2012 - 68,8%, 2011 - 71,4%).
The number of *Salmonella* spp. isolates derived from animals and resistant to colistin is increasing, but still the number of isolates is very small (1-3).
The number of *Campylobacter* spp. isolated from poultry or poultry meat is close to zero and usually they are fully sensitive. *C.coli* is mostly isolated from pigs in the frames of AMR monitoring. 95% of *C.coli* isolates obtained from pigs showed resistance to 1 or more antimicrobials. No resistance to erythromycin of *C.coli* isolates was found, resistance to fluoroquinolones is increasing (24,2% in 2015 to 35% in 2017).
E,coli derived from pigs did not show resistance to cefotaxime in 2015 and in 2017, resistance to fluoroquinolones is decreasing and resistance showed a small number of isolates: in 2015 – 7% and in 2017 – 1,5%. No resistance of *E.coli* isolates to colistin was found.

2. Public health relevance of the findings on food-borne AMR in animals and foodstuffs

Salmonella spp. isolated from humans is mostly resistant to tetracycline, fluoroquinolones, sulphonamide.
Campyloabcter spp. isolated from humans is mostly resistant to flouroquinolones and tetracycline.

3. Recent actions taken to control AMR in food producing animals and food

AMR monitoring of *Salmonella* spp., *Campylobacter* spp., *E.coli, Enterococcus* spp. obtained from food and animals is performed. The AMR monitoring is wider as is prescribed by the Commission Implementing Decision 2013/652 including Salmonella isolates obtained from cattle, sheep, quails, *Campylobacter* spp. isolates obtained from broiler meat and *C.coli* isolates, *Enterococcus* spp. isolates from broilers and pigs and etc.

37. General Description of Antimicrobial Resistance Monitoring: *Salmonella* in Cattle (bovine animals) – animal sample

1. General description of sampling design and strategy

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples.
Details of sampling, methods of sampling are described in the text *Salmonella* spp. in bovine animals.
Type of sample taken – faeces, organs etc.
AMR monitoring is done according to Commission Implementing Decision 2013/652.
All data concerning samples/isolates and isolates AMR testing results is collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
AMR testing of isolates is performed in Central Veterinary and Food Laboratory situated in Tartu.
Isolates for AMR testing are chosen by the Veterinary and Food Board.
AMR testing of isolates is performed according to Commission Implementing Decision 2013/652.

2. Stratification procedure per animal population and food category

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples. Samples are taken at farms.

3. Randomisation procedure per animal population and food category

There is no special sampling plan for AMR monitoring. AMR monitoring includes *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples.
Selection of isolates - one isolate of each serotype from the herd per year.

4. Analytical method used for detection and confirmation

Details of laboratory methodology are described in the text *Salmonella* spp. in bovine animals.
AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Serotyping of the strains and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to the Commission Implementing Decision 2013/652).

6. Results of investigation

AMR testing of 9 isolates was performed in 2017. 3 isolates were fully sensitive to all antimicrobials, 4 isolates were resistant to one antimicrobial and 2 isolates were resistant to two antimicrobials.
One *Salmonella* Dublin isolate showed resistance to colistin (mcr-1 and mcr-2 genes were not detected).

7. Additional information

The number of Salmonella isolates derived from bovine animals is very small.

38. General Description of Antimicrobial Resistance Monitoring: *Salmonella* in Pigs, unspecified – animal sample

1. General description of sampling design and strategy

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples.
Details of sampling, methods of sampling are described in the text *Salmonella* spp. in pigs.
Type of sample taken – faeces, organs etc.
AMR testing is done according to Commission Implementing Decision 2013/652.

All data concerning samples/isolates and isolates AMR testing results is collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
AMR testing of isolates is performed in Central Veterinary and Food Laboratory situated in Tartu.
Isolates for AMR testing are chosen by the Veterinary and Food Board.
AMR testing of isolates is performed according to Commission Implementing Decision 2013/652.

2. Stratification procedure per animal population and food category

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples. Samples are taken at farms.

3. Randomisation procedure per animal population and food category

There is no special sampling plan for AMR monitoring. AMR monitoring includes *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples.
Selection of isolates - one isolate of each serotype from the herd per year.

4. Analytical method used for detection and confirmation

Details of laboratory methodology are described in the text *Salmonella* spp. in pigs.
AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Serotyping of the strains and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to the Commission Implementing Decision 2013/652).

6. Results of investigation

AMR testing of 7 *Salmonella* spp. isolates was performed in 2017. 5 isolates were fully sensitive to all antimicrobials. 1 isolate was resistant to one and 2 isolates to two antimicrobials.
One *Salmonella* Derby isolate showed resistance to colistin (mcr-1 and mcr-2 genes were not detected).

7. Additional information

The number of *Salmonella* isolates derived from pigs is very small.

39. General Description of Antimicrobial Resistance Monitoring: *Salmonella* in Poultry, unspecified – animal sample

1. General description of sampling design and strategy

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that routinely come to the

lab, e.g Salmonella control programme, clinical samples.
Details of sampling, methods of sampling are described in the text *Salmonella* spp. in poultry.
Type of sample taken – faeces, boot swabs, organs etc.
AMR testing is done according to Commission Implementing Decision 2013/652.
All data concerning samples/isolates and isolates AMR testing results is collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
AMR testing of isolates is performed in Central Veterinary and Food Laboratory situated in Tartu.
Isolates for AMR testing are chosen by the Veterinary and Food Board.
AMR testing of isolates is performed according to Commission Implementing Decision 2013/652.

2. Stratification procedure per animal population and food category

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples. Samples are taken at farms.

3. Randomisation procedure per animal population and food category

There is no special sampling plan for AMR monitoring. AMR monitoring includes *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g *Salmonella* control programme, clinical samples.
Selection of isolates - one isolate of each serotype from the flock per year.

4. Analytical method used for detection and confirmation[(b)]

Details of laboratory methodology are described in the text *Salmonella* spp. in poultry.
AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Serotyping of the strains and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance[(C)]

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to the Commission Implementing Decision 2013/652).

6. Results of investigation

7 *Salmonella* spp. isolates were tested in 2017. 3 isolates were fully sensitive. 4 isolates were resistant to one antimicrobial including 1 *Salmonella* Enteritidis isolate derived from laying hens that was resistant to colistin (mcr-1 and mcr-2 genes were not detected).

7. Additional information

The number of *Salmonella* isolates derived from pigs is very small.

40. General Description of Antimicrobial Resistance Monitoring: *Salmonella* in Meat from bovine animals

1. General description of sampling design and strategy

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that are taken in the frames of AMR monitoring according to Commission Implementing Decision 2013/652 and that routinely come to the lab, e.g Salmonella control programme (carcass swabs at slaughterhouse and fresh meat at cutting plants), official control.
Salmonella spp. is analysed in samples that are taken in the frames of AMR monitoring at retail and are not of Estonian origin.
Details of sampling, methods of sampling are described in the Commission Implementing Decision 2013/652 and in the text *Salmonella* spp. in meat from bovine animals.
Type of sample taken – fresh meat, carcass swabs.
All data concerning samples/isolates and isolates AMR testing results is collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
AMR testing of isolates is performed in Central Veterinary and Food Laboratory situated in Tartu.
Isolates for AMR testing are chosen by the Veterinary and Food Board.
AMR testing of isolates is performed according to Commission Implementing Decision 2013/652.

2. Stratification procedure per animal population and food category

There are no so many isolates received per year. Antimicrobial susceptibility testing is performed in all isolates received during the year.
Selection of isolates - one isolate of each serotype from each positive batch/sample is tested.

3. Randomisation procedure per animal population and food category

There is no special sampling plan for *Salmonella* AMR monitoring. AMR monitoring includes *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples.

4. Analytical method used for detection and confirmation

According to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Serotyping of the strains and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline, ceftazidime.

6. Results of investigation

One *Salmonella* Dublin isolate derived from cattle carcass taken at slaughterhouse was tested in 2017 and was fully sensitive to all antimicrobials.

7. Additional information

The number of *Salmonella* isolates derived from bovine meat is close to zero.

41. General Description of Antimicrobial Resistance Monitoring: *Salmonella* in Meat from pig

1. General description of sampling design and strategy[(a)]

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that are taken in the frames of AMR monitoring according to Commission Implementing Decision 2013/652 and that routinely come to the lab, e.g Salmonella control programme (carcass swabs at slaughterhouse and fresh meat at cutting plants), official control.
Salmonella spp. is analysed in samples that are taken in the frames of AMR monitoring at retail and are not of Estonian origin.
Details of sampling, methods of sampling are described in the Commission Implementing Decision 2013/652 and in the text *Salmonella* spp. in meat from pig.
Type of sample taken – fresh meat, carcass swabs.
All data concerning samples/isolates and isolates AMR testing results is collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
AMR testing of isolates is performed in Central Veterinary and Food Laboratory situated in Tartu.
Isolates for AMR testing are chosen by the Veterinary and Food Board.
AMR testing of isolates is performed according to Commission Implementing Decision 2013/652.

2. Stratification procedure per animal population and food category

There are no so many isolates received per year. Antimicrobial susceptibility testing is performed in all isolates received during the year.
Selection of isolates - one isolate of each serotype from each positive batch/sample is tested.

3. Randomisation procedure per animal population and food category

There is no special sampling plan for Salmonella AMR monitoring. AMR monitoring includes *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g Salmonella control programme, clinical samples.

4. Analytical method used for detection and confirmation[(b)]

According to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Serotyping of the strains and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance[(C)]

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline, ceftazidime.

6. Results of investigation

Altogether 10 *Salmonella* Derby isolates were tested: 9 isolates were derived from pig's carcases and one from pig meat taken at retail in the frames of AMR monitoring programme.
All isolates were fully sensitive to all antimicrobials tested except 1 isolate derived from pig carcass was resistant to three antimicrobials.

42. General Description of Antimicrobial Resistance Monitoring: *Salmonella* in Meat from broilers (*Gallus gallus*)

1. General description of sampling design and strategy[(a)]

AMR monitoring covers *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g *Salmonella* control programme (carcass swabs at slaughterhouse and fresh meat at cutting plants), official control.
Details of sampling, methods of sampling are described in the Commission Implementing Decision 2013/652 and in the text *Salmonella* spp. in meat from broilers.
Type of sample taken – fresh meat, neck skin.
All data concerning samples/isolates and isolates AMR testing results is collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
AMR testing of isolates is performed in Central Veterinary and Food Laboratory situated in Tartu.
Isolates for AMR testing are chosen by the Veterinary and Food Board.
AMR testing of isolates is performed according to Commission Implementing Decision 2013/652.

2. Stratification procedure per animal population and food category

There are no so many isolates received per year. Antimicrobial susceptibility testing is performed in all isolates received during the year.
Selection of isolates - one isolate of each serotype from each positive batch/sample is tested.

3. Randomisation procedure per animal population and food category

There is no special sampling plan for Salmonella AMR monitoring. AMR monitoring includes *Salmonella* spp. isolates that originate from samples that routinely come to the lab, e.g *Salmonella* control programme, clinical samples.

4. Analytical method used for detection and confirmation[(b)]

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime.

5. Laboratory methodology used for detection of antimicrobial resistance

According to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Serotyping of the strains and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

6. Results of investigation

No AMR testing of *Salmonella* spp. isolates was performed in 2017 as there were no *Salmonella* isolates found in broilers meat.

43. General Description of Antimicrobial Resistance Monitoring: *Campylobacter* in Pigs – fattening pigs – animal sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
At the end of the year 2016 there were 82 holdings, who sent their pigs to the slaughterhouses during that year. The sampling plan for 2017 was made considering this. But in 2017 only 68 pig's caecal samples were taken, that originate from 68 different holdings. The samples were taken from all holdings, which sent their pigs to slaughterhouses during 2017 year. The number of samples taken was small because of the African Swine fever and the fact that due to this disease or due to some other circumstances some of the farms were closed or stopped their work.
Sampling days were randomly selected at slaughterhouse. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs. It was supposed to distribute the collection of samples at slaughter evenly over the each month of the year and the online information was provided to the inspectors in order they can see how many samples and from what farms are already taken and etc. But due to ASF and as some farms do not slaughter animals regularly and etc. it became impossible.
2 pig's caecal samples were taken from each holding. A pooled sample was analysed at the laboratory on the presence of *E.coli, Campylobacter* spp, *Enterococcus faecium* and *Enterococcus faecalis*, ESBL/AmpC *E.coli* and carbapenemase-producing *E. coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
One *Campylobacter* spp. isolate from each holding per year was tested for AMR.
20 *Campylobacter* spp. isolates received during the year were tested for AMR.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs.

3. Randomisation procedure per animal population and food category

The number of fattening pig's caecal samples were distributed between slaughterhouses according to the capacity of the slaughterhouses and the knowledge where and what holding is slaughtering its pigs.
As the number of holdings that send their pigs to the slaughterhouses was smaller than 150, caecal samples from pigs from all holdings that sent their pigs for slaughter were taken. As the number of samples taken was small, so all isolates per bacterial specie received were tested for AMR.
One sample consisting of 2 sub-samples per holding was taken at slaughterhouse. The sampling was distributed between slaughterhouses according to their capacity. It was supposed to distribute the collection of pig's caecal samples at slaughterhouses evenly over each month of the year, but due to African swine fever and due to the fact that many of the farms are small and not slaughter their pigs regularly it became impossible. In order to get all possible samples all holdings that sent their pigs for slaughter were sampled.

4. Analytical method used for detection and confirmation

Isolation of *Campylobacter* spp. is performed according to the *Microbiology of the food chain - Horizontal method for detection and enumeration of Campylobacter spp. - Part1: Detection method*

(ISO 10272-1:2OI7).
AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Campylobacter isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are erythromycin, ciprofloxacin, tetracycline, gentamicin, nalidixic acid, streptomycin (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 the caecal samples from pigs that originated from 68 holdings were taken. From these samples 20 *Campylobacter coli* were isolated. All *C. coli* isolates were tested for AMR.
5% of the tested isolates were fully sensitive (in 2015 – 12,1%).
15% of the *C. coli* isolates were multiresistant (in 2015 – 18,2%).
85% of the isolates were resistant to streptomycin, 40% to tetracycline and 35% to fluoroquinolones.

44. General Description of Antimicrobial Resistance Monitoring: *Escherichia coli*, non-pathogenic in Pigs – fattening pigs – animal sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
At the end of the year 2016 there were 82 holdings, who sent their pigs to the slaughterhouses during that year. The sampling plan for 2017 was made considering this. But in 2017 only 68 pig's caecal samples were taken, that originate from 68 different holdings. The samples were taken from all holdings, which sent their pigs to slaughterhouses during 2017 year. The number of samples taken was small because of the African Swine fever and the fact that due to this disease or due to some other circumstances some of the farms were closed or stopped their work.
Sampling days were randomly selected at slaughterhouse. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs. It was supposed to distribute the collection of samples at slaughter evenly over the each month of the year and the online information was provided to the inspectors in order they can see how many samples and from what farms are already taken and etc. But due to ASF and as some farms do not slaughter animals regularly and etc. it became impossible.
2 pig's caecal samples were taken from each holding. A pooled sample was analysed at the laboratory on the presence of *E.coli, Campylobacter* spp, *Enterococcus faecium* and *Enterococcus faecalis*, ESBL/AmpC *E.coli* and carbapenemase-producing *E.coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
One *E.coli* isolate from each holding per year was tested for AMR.
67 *E.coli* isolates received during the year were tested for AMR.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs.

3. Randomisation procedure per animal population and food category

The number of fattening pig's caecal samples were distributed between slaughterhouses according to the capacity of the slaughterhouses and the knowledge where and what holding is slaughtering its pigs. As the number of holdings that send their pigs to the slaughterhouses was smaller than 150, caecal samples from pigs from all holdings that sent their pigs for slaughter were taken. As the number of samples taken was small, so all isolates per bacterial specie received were tested for AMR.
One sample consisting of 2 sub-samples per holding was taken at slaughterhouse. The sampling was distributed between slaughterhouses according to their capacity. It was supposed to distribute the collection of pig's caecal samples at slaughterhouses evenly over each month of the year, but due to African swine fever and due to the fact that many of the farms are small and not slaughter their pigs regularly it became impossible. In order to get all possible samples all holdings that sent their pigs for slaughter were sampled.

4. Analytical method used for detection and confirmation

According to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
E.coli isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2015 68 caecal samples from pigs that originated from 68 holdings were taken. From these samples 67 *E.coli* were isolated and all of them were tested for AMR.
62,7% of the tested isolates were fully sensitive (in 2015 - 43,5%). 11,9% of the tested isolates were multiresistant (in 2015 – 30,6%).

45. General Description of Antimicrobial Resistance Monitoring: *Enterococcus faecalis* and *Enterococcus faecium* in Pigs – fattening pigs – animal sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
At the end of the year 2016 there were 82 holdings, which sent their pigs to the slaughterhouses during that year. The sampling plan for 2017 was made considering this. But in 2017 only 68 pig's caecal samples were taken, that originate from 68 different holdings. The samples were taken from all holdings, which sent their pigs to slaughterhouses during 2017 year. The number of samples taken

was small because of the African Swine fever and the fact that due to this disease or due to some other circumstances some of the farms were closed or stopped their work.
Sampling days were randomly selected at slaughterhouse. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs. It was supposed to distribute the collection of samples at slaughter evenly over the each month of the year and the online information was provided to the inspectors in order they can see how many samples and from what farms are already taken and etc. But due to ASF and as some farms do not slaughter animals regularly and etc. it became impossible.
2 pig's caecal samples were taken from each holding. A pooled sample was analysed at the laboratory on the presence of *E.coli, Campylobacter* spp, *Enterococcus faecium* and *Enterococcus faecalis*, ESBL/AmpC *E.coli* and carbapenemase-producing *E.coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
One *Enterococcus faecalis* and one *Enterococcus faecium* isolate from each holding per year were tested for AMR.
25 *Enterococcus faecalis* and 40 *Enterococcus faecium* isolates received during the year were tested for AMR.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs.

3. Randomisation procedure per animal population and food category

The number of fattening pig's caecal samples were distributed between slaughterhouses according to the capacity of the slaughterhouses and the knowledge where and what holding is slaughtering its pigs. As the number of holdings that send their pigs to the slaughterhouses was smaller than 150, caecal samples from pigs from all holdings that sent their pigs for slaughter were taken. As the number of samples taken was small, so all isolates per bacterial specie received were tested for AMR.
One sample consisting of 2 sub-samples per holding was taken at slaughterhouse. The sampling was distributed between slaughterhouses according to their capacity. It was supposed to distribute the collection of pig's caecal samples at slaughterhouses evenly over each month of the year, but due to African swine fever and due to that many of the farms are small and not slaughter their pigs regularly it became impossible. In order to get all possible samples all holdings that sent their pigs for slaughter were sampled.

4. Analytical method used for detection and confirmation

According to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
Enterococcus spp. isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 68 caecal samples from pigs that originated from 68 holdings were taken. From these samples 25 *Enterococcus faecalis* and 40 *Enterococcus faecium* were isolated and all of them were tested for AMR.
72% of tested *Enetrococcus faecalis* isolates showed resistance to a minimum one antimicrobial, 55,6% of them were multiresistant.
72% of the isolates were resistant to tetracycline, 52% to erythromycin.
80% of tested *Enetrococcus faecium* isolates showed resistance to a minimum one antimicrobial, 15,6% of them were multiresistant. 40% of the isolates were resistant to erythromycin, 20% to gentamycin and 15% to tetracycline.

46. General Description of Antimicrobial Resistance Monitoring: ESBL/AmpC producing *Esherichia coli* in Pigs – fattening pigs – animal sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
At the end of the year 2016 there were 82 holdings, who sent their pigs to the slaughterhouses during that year. The sampling plan for 2017 was made considering this. But in 2017 only 68 pig's caecal samples were taken, that originate from 68 different holdings. The samples were taken from all holdings, which sent their pigs to slaughterhouses during 2017 year. The number of samples taken was small because of the African Swine fever and the fact that due to this disease or due to some other circumstances some of the farms were closed or stopped their work.
Sampling days were randomly selected at slaughterhouse. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs. It was supposed to distribute the collection of samples at slaughter evenly over the each month of the year and the online information was provided to the inspectors in order they can see how many samples and from what farms are already taken and etc. But due to ASF and as some farms do not slaughter animals regularly and etc. it became impossible.
2 pig's caecal samples were taken from each holding. A pooled sample was analysed at the laboratory on the presence of *E. coli, Campylobacter* spp, *Enterococcus faecium* and *Enterococcus faecalis*, ESBL/AmpC *E. coli* and carbapenemase-producing *E. coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
One presumptive ESBL/AmpC producing *E. coli* isolate obtained from each caecal sample from each holding per year was tested for AMR.
24 presumptive ESBL/AmpC producing *E. coli* isolates received during the year were tested for AMR.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs.

3. Randomisation procedure per animal population and food category

The number of fattening pig's caecal samples were distributed between slaughterhouses according to the capacity of the slaughterhouses and the knowledge where and what holding is slaughtering its

pigs. As the number of holdings that send their pigs to the slaughterhouses was smaller than 150, caecal samples from pigs from all holdings that sent their pigs for slaughter were taken. As the number of samples taken was small, so all isolates per bacterial specie received were tested for AMR.
One sample consisting of 2 sub-samples per holding was taken at slaughterhouse. The sampling was distributed between slaughterhouses according to their capacity. It was supposed to distribute the collection of pig's caecal samples at slaughterhouses evenly over each month of the year, but due to African swine fever and due to that many of the farms are small and not slaughter their pigs regularly it became impossible. In order to get all possible samples all holdings that sent their pigs for slaughter were sampled.

4. Analytical method used for detection and confirmation

According to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
E.coli isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 68 caecal samples from pigs that originated from 68 holdings were taken. From these samples 24 presumptive ESBL/AmpC producing *E.coli* were isolated and all of them were tested for AMR.
62,5% of the tested isolates were multiresistant.

47. General Description of Antimicrobial Resistance Monitoring: Carbapenemase producing *Esherichia coli* in Pigs – fattening pigs – animal sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
At the end of the year 2016 there were 82 holdings, who sent their pigs to the slaughterhouses during that year. The sampling plan for 2017 was made considering this. But in 2017 only 68 pig's caecal samples were taken, that originate from 68 different holdings. The samples were taken from all holdings, which sent their pigs to slaughterhouses during 2017 year. The number of samples taken was small because of the African Swine fever and the fact that due to this disease or due to some other circumstances some of the farms were closed or stopped their work.
Sampling days were randomly selected at slaughterhouse. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs. It was supposed to distribute the collection of samples at slaughter evenly over the each month of the year and the online information was provided to the inspectors in order they can see how many samples and from what farms are already taken and etc. But due to ASF and as some farms do not slaughter animals regularly and etc. it became impossible.
2 pig's caecal samples were taken from each holding. A pooled sample was analysed at the laboratory on the presence of *E.coli, Campylobacter* spp, *Enterococcus faecium* and *Enterococcus faecalis*,

ESBL/AmpC *E.coli* and carbapenemase-producing *E.coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
No AMR tests were performed in 2017 as no carbapenemase-producing *E.coli* was found in domestic pigs.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652. The samples were distributed between slaughterhouses according to their capacity and according to the knowledge where the concrete farm is slaughtering its pigs.

3. Randomisation procedure per animal population and food category

The number of fattening pig's caecal samples were distributed between slaughterhouses according to the capacity of the slaughterhouses and the knowledge where and what holding is slaughtering its pigs. As the number of holdings that send their pigs to the slaughterhouses was smaller than 150, caecal samples from pigs from all holdings that sent their pigs for slaughter were taken. As the number of samples taken was small, so all isolates per bacterial specie received were tested for AMR.
One sample consisting of 2 sub-samples per holding was taken at slaughterhouse. The sampling was distributed between slaughterhouses according to their capacity. It was supposed to distribute the collection of pig's caecal samples at slaughterhouses evenly over each month of the year, but due to African swine fever and due to the fact that many of the farms are small and not slaughter their pigs regularly it became impossible. In order to get all possible samples all holdings that sent their pigs for slaughter were sampled.

4. Analytical method used for detection and confirmation

For isolation of carbapenemase-producing *E.coli* the chrom ID CARBA SMART agar (KPC and OXA48) Biomérieux is used.
AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
E.coli isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 68 caecal samples from pigs that originated from 68 holdings were taken. From these samples no presumptive carbapenemase-producing *E.coli* were isolated as in the year 2015.

48. General Description of Antimicrobial Resistance Monitoring: ESBL/AmpC producing *Esherichia coli* in Meat from pig – food sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
The 150 samples of fresh pig meat were distributed between counties according to the number of citizens in each county. Samples were taken at retail.
Sampling was evenly distributed over each month of the year. Sampling was random regarding sampling days each month.
Each sample was analysed on presence of presumptive ESBL/AmpC *E. coli* and cabapenemase-producing *E. coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
One presumptive ESBL/AmpC producing *E. coli* isolate obtained from each sample per year was tested for AMR.
3 presumptive ESBL/AmpC producing *E. coli* isolates received during the year were tested for AMR.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652.
The 150 samples of fresh pig meat were distributed between counties (there are 15 counties in the country) according to the number of citizens in each county.
The sampling was evenly distributed over each month of the year.
Sampling was random regarding the county where the sample should be taken and regarding sampling days each month.

3. Randomisation procedure per animal population and food category

Sampling plan and distribution of samples between counties per month was made by the Central authority (Veterinary and Food Board). Sampling was random regarding the county where the sample should be taken. Sampling was evenly distributed over each month of the year.
The samples and sampling dates were randomly selected.
One sample per batch was taken at retail. It was allowed to take not more than 2 samples belonging to one animal specie per retail establishment.

4. Analytical method used for detection and confirmation

AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
E.coli isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 3 presumptive ESBL/AmpC producing *E.coli* were isolated from 150 fresh pig meat samples taken (in 2015 – 5 isolates).
All ESBL/AmpC *E.coli* isolates were multiresistant.

49. General Description of Antimicrobial Resistance Monitoring: Carbapenemase-producing *Esherichia coli* in Meat from pig – food sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
The 150 samples of fresh pig meat were distributed between counties according to the number of citizens in each county. Samples were taken at retail.
Sampling was evenly distributed over each month of the year. Sampling was random regarding sampling days each month.
Each sample was analysed on presence of presumptive ESBL/AmpC *E.coli* and cabapenemase-producing *E.coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
No presumptive carbapenemase-producing *E.coli* isolates were obtained from pig meat in 2017.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652.
The 150 samples of fresh pig meat were distributed between counties (there are 15 counties in the country) according to the number of citizens in each county.
The sampling was evenly distributed over each month of the year.
Sampling was random regarding the county where the sample should be taken and regarding sampling days each month.

3. Randomisation procedure per animal population and food category

Sampling plan and distribution of samples between counties per month was made by the Central authority (Veterinary and Food Board). Sampling was random regarding the county where the sample should be taken. Sampling was evenly distributed over each month of the year.
The samples and sampling dates were randomly selected.
One sample per batch was taken at retail. It was allowed to take not more than 2 samples belonging to one animal specie per retail establishment.

4. Analytical method used for detection and confirmation

For isolation of carbapenemase-producing *E.coli* the chrom ID CARBA SMART agar (KPC and OXA48) Biomérieux is used.
AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
E.coli isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 no presumptive carbapenemase-producing *E.coli* were isolated from 150 fresh pig meat samples taken.

50. General Description of Antimicrobial Resistance Monitoring: ESBL/AmpC producing *Esherichia coli* in Meat from bovine animals – food sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
The 150 samples of fresh bovine meat were distributed between counties according to the number of citizens in each county. Samples were taken at retail.
Sampling was evenly distributed over each month of the year. Sampling was random regarding sampling days each month.
Each sample was analysed on presence of presumptive ESBL/AmpC *E.coli* and cabapenemase-producing *E.coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
No presumptive ESBL/AmpC producing *E.coli* isolates were received during the year, thus no isolates were tested for AMR.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652.
The 150 samples of fresh bovine meat were distributed between counties (there are 15 counties in the country) according to the number of citizens in each county.
The sampling was evenly distributed over each month of the year.
Sampling was random regarding the county where the sample should be taken and regarding sampling days each month.

3. Randomisation procedure per animal population and food category

Sampling plan and distribution of samples between counties per month was made by the Central authority (Veterinary and Food Board). Sampling was random regarding the county where the sample should be taken. Sampling was evenly distributed over each month of the year.
The samples and sampling dates were randomly selected.
One sample per batch was taken at retail. It was allowed to take not more than 2 samples belonging to one animal specie per retail establishment.

4. Analytical method used for detection and confirmation

AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
E.coli isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 no presumptive ESBL/AmpC producing *E.coli* were isolated from 150 fresh pig meat samples taken.

51. General Description of Antimicrobial Resistance Monitoring: Carbapenemase-producing *Esherichia coli* in Meat from bovine animals – food sample

1. General description of sampling design and strategy

Sampling design was performed according to Commission Implementing Decision 2013/652.
The 150 samples of fresh bovine meat were distributed between counties according to the number of citizens in each county. Samples were taken at retail.
Sampling was evenly distributed over each month of the year. Sampling was random regarding sampling days each month.
Each sample was analysed on presence of presumptive ESBL/AmpC *E.coli* and cabapenemase-producing *E.coli*.
Isolation of abovementioned bacterial species and AMR testing of the isolates was performed in one laboratory - Central Veterinary and Food Laboratory, Tartu.
All data concerning samples/isolates and AMR testing results was collected by the Veterinary and Food Board, who is responsible for AMR monitoring coordination.
No presumptive carbapenemase-producing *E.coli* isolates were obtained from bovine meat in 2017.

2. Stratification procedure per animal population and food category

Stratification was performed according to the Commission Regulation 2013/652.
The 150 samples of fresh pig meat were distributed between counties (there are 15 counties in the country) according to the number of citizens in each county.
The sampling was evenly distributed over each month of the year.
Sampling was random regarding the county where the sample should be taken and regarding sampling days each month.

3. Randomisation procedure per animal population and food category

Sampling plan and distribution of samples between counties per month was made by the Central authority (Veterinary and Food Board). Sampling was random regarding the county where the sample should be taken. Sampling was evenly distributed over each month of the year.
The samples and sampling dates were randomly selected.
One sample per batch was taken at retail. It was allowed to take not more than 2 samples belonging to one animal specie per retail establishment.

4. Analytical method used for detection and confirmation

For isolation of carbapenemase-producing *E.coli* the chrom ID CARBA SMART agar (KPC and OXA48) Biomérieux is used.
AMR testing is performed according to the Commission Implementing Decision 2013/652 and protocols developed by the EURL-AR.
E.coli isolation and AMR testing are performed in the VFL Central Lab.
Cut-off values used according to the Commission Implementing Decision 2013/652.

5. Laboratory methodology used for detection of antimicrobial resistance

Antimicrobials included in monitoring are ampicillin, gentamicin, ciprofloxacin, chloramphenicol, cefotaxime, sulfamethoxazole, trimethoprim, nalidixic acid, tetracycline, colistin, meropenem, azithromycin, tigecycline and ceftazidime (according to Commission Implementing Decision 2013/652).

6. Results of investigation

In 2017 no presumptive carbapenemase-producing *E.coli* were isolated from 150 fresh bovine meat samples taken.