ZOONOSES MONITORING

Switzerland

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 2023

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 Switzerland during the year 2023.

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)**
Cattle (bovine animals)	Cattle (bovine animals)	31,993	1,528,595	601,391
Gallus gallus (fowl)	Gallus gallus (fowl) - breeding flocks, unspecified	1,922	369,544	
	Gallus gallus (fowl) - broilers	1,147	8,762,583	86,532,540
	Gallus gallus (fowl) - laying hens	28,296	5,051,390	
Pigs	Pigs	5,063	1,324,415	2,455,283
Small ruminants	Goats	6,551	81,256	43,827
	Sheep	7,984	362,375	238,833
Solipeds, domestic	Solipeds, domestic	19,446	111,748	1,129
Turkeys	Turkeys - fattening flocks	417	85,314	

DISEASE STATUS TABLES

TABLE NAME	REGION	Zoonotic Agent	DISEASE STATUS UNIT	Number of herds with status officially free	Number of infected herds	Total number of herds
Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme	SWITZERLAND	Brucella		31,993	0	31,993

TABLE NAME	REGION	Zoonotic Agent	DISEASE STATUS UNIT	Number of herds with status officially free	Number of infected herds	Total number of herds
Ovine or Caprine brucellosis in countries and regions that do not receive Community co-financing for eradication programme	SWITZERLAND	Brucella		14,535	0	14,535

DISEASE STATUS TABLES

TABLE NAME	REGION	Zoonotic Agent	DISEASE STATUS UNIT	Number of herds with status officially free	Number of infected herds	Total number of herds
Bovine tuberculosis in countries and regions that do not receive Community co-financing for eradication programme	SWITZERLAND	Mycobacterium bovis		31,993	0	31,993

PREVALENCE TABLES

Table BRUCELLA:Brucella in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	6	1	Brucella, unspecified sp.	1
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	1	0	Brucella	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	4	0	Brucella	0
	Hares - zoo animal - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	1	0	Brucella	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	2	0	Brucella	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	11	0	Brucella	0

Table CAMPYLOBACTER:Campylobacter in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	6	1	Campylobacter jejuni	1
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological special tests	animal	407	16	Campylobacter jejuni	4
							Campylobacter upsaliensis	4
							Campylobacter, unspecified sp.	8
	Cattle (bovine animals) - calves (under 1 year) - Slaughterhouse - Switzerland - animal sample - caecum - Monitoring - EFSA specifications - Official sampling - Objective sampling	N_A	ISO 10272-1:2017 Campylobacter	herd/flock	306	162	Campylobacter coli	8
							Campylobacter jejuni	154
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological special tests	animal	34	5	Campylobacter jejuni	1
							Campylobacter, unspecified sp.	4
	Chinchillas - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Deer - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	1	Campylobacter coli	1
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	11	1	Campylobacter hyointestinalis	1
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological special tests	animal	852	66	Campylobacter coli	2
							Campylobacter jejuni	16
							Campylobacter upsaliensis	12
							Campylobacter, unspecified sp.	36
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	6	0	Campylobacter	0
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	9	0	Campylobacter	0
	Mice - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	4	0	Campylobacter	0
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	5	0	Campylobacter	0
	Pigs - fattening pigs - Slaughterhouse - Switzerland - animal sample - caecum - Monitoring - EFSA specifications - Official sampling - Objective sampling	N_A	ISO 10272-1:2017 Campylobacter	herd/flock	308	241	Campylobacter coli	241
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	2	2	Campylobacter, unspecified sp.	2
	Quails - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	2	1	Campylobacter, unspecified sp.	1
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	10	0	Campylobacter	0
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	3	0	Campylobacter	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	10	1	Campylobacter jejuni	1
	Solipeds, domestic - donkeys - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	73	4	Campylobacter fetus	1
							Campylobacter jejuni	1
							Campylobacter, unspecified sp.	2
	Squirrels - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Turtles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	2	0	Campylobacter	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	126	20	Campylobacter coli	2
							Campylobacter hyointestinalis	1
							Campylobacter jejuni	17

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	Sampling Details	Method	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Meat from broilers (Gallus gallus) - carcase - chilled - Slaughterhouse - Switzerland - food sample - neck skin - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	single (food/feed)	10	Gram	N_A	ISO 10272-2:2017 Campylobacter	260	70	Campylobacter, unspecified sp.	81
			25	Gram	N_A	ISO 10272-2:2017 Campylobacter	395	141	Campylobacter coli	23
									Campylobacter jejuni	122
									Campylobacter, unspecified sp.	143
	Meat from broilers (Gallus gallus) - fresh - skinned - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	52	18	Campylobacter, unspecified sp.	18
	Meat from broilers (Gallus gallus) - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	225	9	Campylobacter, unspecified sp.	9
	Meat from broilers (Gallus gallus) - fresh - with skin - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	9	3	Campylobacter, unspecified sp.	3
	Meat from broilers (Gallus gallus) - fresh - with skin - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	47	4	Campylobacter, unspecified sp.	4
			25	Gram	N_A	ISO 10272-1:2017 Campylobacter	76	6	Campylobacter, unspecified sp.	6
	Meat from broilers (Gallus gallus) - fresh - with skin - Slaughterhouse - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	2	0	Campylobacter	0
	Meat from broilers (Gallus gallus) - meat preparation - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	33	1	Campylobacter, unspecified sp.	1
			25	Gram	N_A	ISO 10272-1:2017 Campylobacter	8	1	Campylobacter, unspecified sp.	1
	Meat from broilers (Gallus gallus) - meat products - non-ready-to-eat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	26	5	Campylobacter, unspecified sp.	5
	Meat from broilers (Gallus gallus) - meat products - ready-to-eat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	15	0	Campylobacter	0
	Meat from broilers (Gallus gallus) - mechanically separated meat (MSM) - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	2	0	Campylobacter	0
	Meat from turkey - meat products - cooked, ready-to-eat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	10	0	Campylobacter	0

Table COXIELLA: in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Method	total units tested	total units positive	Number of Clinical Affected Herds	Zoonoses	N units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	animal	Real-Time PCR (qualitative or quantitative)	1	0		Coxiella	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	473	7		Coxiella burnetii	7
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - foetus/stillbirth - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	10	0		Coxiella	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	2975	363		Coxiella burnetii	363
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - vaginal swab - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	84	25		Coxiella burnetii	25
	Goats - Unspecified - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	30	2		Coxiella burnetii	2
	Goats - Unspecified - Switzerland - animal sample - foetus/stillbirth - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	4	1		Coxiella burnetii	1
	Goats - Unspecified - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	115	21		Coxiella burnetii	21
	Goats - Unspecified - Switzerland - animal sample - vaginal swab - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	4	2		Coxiella burnetii	2
	Pigs - Unspecified - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	2	0		Coxiella	0
	Sheep - Unspecified - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	44	0		Coxiella	0
	Sheep - Unspecified - Switzerland - animal sample - foetus/stillbirth - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	4	0		Coxiella	0
	Sheep - Unspecified - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	163	18		Coxiella burnetii	18
	Sheep - Unspecified - Switzerland - animal sample - vaginal swab - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	5	0		Coxiella	0
	Zoo animals, all - Zoo - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	animal	Staining	4	0		Coxiella	0

Table ECHINOCOCCUS:Echinococcus in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	8	0	Echinococcus	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Deer - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	1	Echinococcus multilocularis	1
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	38	16	Echinococcus multilocularis	16
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	1	Echinococcus multilocularis	1
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	1	Echinococcus multilocularis	1
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	3	Echinococcus multilocularis	3
	Pigs - Slaughterhouse - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	2	Echinococcus multilocularis	2
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	7	2	Echinococcus multilocularis	2

Table FRANCISELLA:Francisella in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Francisella	0
	Hares - zoo animal - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	PCR	animal	10	3	Francisella tularensis	3
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	PCR	animal	1	0	Francisella	0

Table LISTERIA:Listeria in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	5	0	Listeria	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	8	2	Listeria monocytogenes	2
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Listeria	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	3	0	Listeria	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Histology	animal	4	3	Listeria monocytogenes	3
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	15	0	Listeria	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	5	1	Listeria monocytogenes	1
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	4	0	Listeria	0

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	Sampling Details	total units tested	total units positive	Method	Zoonoses	N units tested	N units positive
SWITZERLAND	Cheeses, made from unspecified milk or other animal milk - unspecified - Unspecified - Not Available - Not Available - Monitoring - Industry sampling - Selective sampling	single (food/feed)	25	Gram	N_A	1165	3	detection	Listeria monocytogenes	1,165	3
							21	detection	Listeria spp., unspecified	1,165	21

Table LYSSAVIRUS:Lyssavirus in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Badgers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Bats - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	23	1	European bat lyssavirus 2	1
	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	11	0	Lyssavirus	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	2	0	Lyssavirus	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	16	0	Lyssavirus	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	5	0	Lyssavirus	0
	Lynx - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Martens - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0

Table MYCOBACTERIUM:Mycobacterium in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	5	1	Mycobacterium spp., unspecified	1
	Badgers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Mycobacterium	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	6	3	Mycobacterium bovis	2
							Mycobacterium microti	1
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Visual inspection	animal	165	0	Mycobacterium	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Ferrets - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Gallus gallus (fowl) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Llamas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	7	2	Mycobacterium microti	2
	Steinbock - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	0	Mycobacterium	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	15	1	Mycobacterium tuberculosis	1

Table SALMONELLA:Salmonella in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Number of Flocks Under Control Programme	Target Verification	Sampling Details	Method	total units tested	total units positive	Zoonoses	Units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	8	0	Salmonella	0
	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	8	0	Salmonella	0
	Camels - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Canary - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	426	15	Salmonella enterica, subspecies enterica	2
									Salmonella Enteritidis	3
									Salmonella Napoli	1
									Salmonella spp., unspecified	5
									Salmonella Tennessee	1
									Salmonella Typhimurium	3
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1803	250	Salmonella enterica, subspecies enterica	13
									Salmonella Enteritidis	6
									Salmonella spp., unspecified	184
									Salmonella Typhimurium	31
									Salmonella Typhimurium, monophasic	16
	Chinchillas - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Crows - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	3	0	Salmonella	0
	Deer - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	11	0	Salmonella	0
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	866	31	Salmonella Agona	1
									Salmonella Ajiobo	1
									Salmonella Cerro	1
									Salmonella Enteritidis	1
									Salmonella Give	1
									Salmonella Havana	1
									Salmonella Indiana	1
									Salmonella Infantis	2
									Salmonella Napoli	1
									Salmonella Newport	1
									Salmonella spp., unspecified	17
									Salmonella Typhimurium	2
									Salmonella Veneziana	1
	Ducks - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	5	1	Salmonella Typhimurium	1
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Number of Flocks Under Control Programme	Target Verification	Sampling Details	Method	total units tested	total units positive	Zoonoses	Units positive
SWITZERLAND	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	4485	N	N_A	ISO 6579:2002 Salmonella	537	7	Salmonella Enteritidis	2
									Salmonella Infantis	1
									Salmonella Montevideo	1
									Salmonella Rissen	1
									Salmonella Senftenberg	2
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	4485	Y	N_A	ISO 6579:2002 Salmonella	595	1	Salmonella Enteritidis	1
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock	4485	N	N_A	ISO 6579:2002 Salmonella	58	1	Salmonella Agona	1
	Gallus gallus (fowl) - laying hens - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	997	Y	N_A	ISO 6579:2002 Salmonella	821	11	Salmonella Enteritidis	8
									Salmonella Typhimurium	3
				N	N_A	ISO 6579:2002 Salmonella	821	19	Salmonella Abony	1
									Salmonella Agona	1
									Salmonella Ajiobo	1
									Salmonella Albany	1
									Salmonella Enteritidis	6
									Salmonella Havana	1
									Salmonella Mbandaka	1
									Salmonella Napoli	1
									Salmonella Typhimurium	4
									Salmonella Typhimurium, monophasic	2
	Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	67	Y	N_A	ISO 6579:2002 Salmonella	58	0	Salmonella	0
				N	N_A	ISO 6579:2002 Salmonella	58	1	Salmonella Typhimurium, monophasic	1
	Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	135	Y	N_A	ISO 6579:2002 Salmonella	67	0	Salmonella	0
	Geese - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	60	0	Salmonella	0
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	10	0	Salmonella	0
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Mice - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Oscine birds - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	2	0	Salmonella	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	5	0	Salmonella	0
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	31	9	Salmonella enterica, subspecies enterica	6
									Salmonella Typhimurium	3

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Number of Flocks Under Control Programme	Target Verification	Sampling Details	Method	total units tested	total units positive	Zoonoses	Units positive
SWITZERLAND	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Slide agglutination according White Kauffmann Le Minor Scheme	76	3	Salmonella Derby	1
									Salmonella enterica, subspecies enterica	1
									Salmonella Enteritidis	1
	Quails - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	11	0	Salmonella	0
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	19	0	Salmonella	0
	Reindeers - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	17	1	Salmonella Typhimurium	1
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	13	5	Salmonella spp., unspecified	5
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	115	15	Salmonella IIIb 61:k:1,5,7	5
									Salmonella spp., unspecified	10
	Snakes - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	6	4	Salmonella enterica, subspecies diarizonae	1
									Salmonella enterica, subspecies enterica	1
									Salmonella spp., unspecified	2
	Solipeds, domestic - donkeys - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	7	0	Salmonella	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	307	15	Salmonella Enteritidis	3
									Salmonella Kottbus	1
									Salmonella Napoli	1
									Salmonella Pomona	1
									Salmonella spp., unspecified	2
									Salmonella Typhimurium	7
	Squirrels - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Swans - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	93	N	N_A	ISO 6579:2002 Salmonella	25	6	Salmonella Albany	5
									Salmonella enterica subsp. enterica rough	1
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	93	Y	N_A	ISO 6579:2002 Salmonella	28	1	Salmonella Enteritidis	1
				N	N_A	ISO 6579:2002 Salmonella	28	1	Salmonella Enteritidis	1
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock	93	N	N_A	ISO 6579:2002 Salmonella	3	0	Salmonella	0
	Turtles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	17	0	Salmonella	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	276	29	Salmonella Bardo	1
									Salmonella Beaudesert	1
									Salmonella Carrau	1
									Salmonella Coeln	2
									Salmonella enterica, subspecies diarizonae	1

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Number of Flocks Under Control Programme	Target Verification	Sampling Details	Method	total units tested	total units positive	Zoonoses	Units positive
SWITZERLAND	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	276	29	Salmonella enterica, subspecies enterica	1
									Salmonella Enteritidis	1
									Salmonella Goulfey	1
									Salmonella Hessarek	2
									Salmonella Hvittingfoss	1
									Salmonella I, group O:18	1
									Salmonella II 58:c:z6	2
									Salmonella IIIb	1
									Salmonella IIIb 14:z10:z	1
									Salmonella IIIb 38:k:z35	1
									Salmonella IIIb 47:k	1
									Salmonella IIIb 47:z10:z35	1
									Salmonella IIIb 48:r:z	1
									Salmonella IIIb 48:z52:z	1
									Salmonella IIIb 53:l,v:e,n,x,z15	1
									Salmonella IIIb 61:z52:z53	1
									Salmonella IV 44:z4,z32:-	1
									Salmonella Newport	1
									Salmonella spp., unspecified	3

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	Sampling Details	Method	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Meat from bovine animals - carcase - Slaughterhouse - Switzerland - food sample - carcase swabs - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	single (food/feed)	400	Square centimetre	N_A	ISO 6579-1:2017 Salmonella	858	0	Salmonella	0
	Meat from broilers (Gallus gallus) - carcase - chilled - Slaughterhouse - Switzerland - food sample - neck skin - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	377	1	Salmonella Enteritidis	1
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	344	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - skinned - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	24	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	364	1	Salmonella Enteritidis	1
	Meat from broilers (Gallus gallus) - fresh - with skin - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	30	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - with skin - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	206	6	Salmonella Enteritidis	6
	Meat from broilers (Gallus gallus) - fresh - with skin - Slaughterhouse - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	28	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat preparation - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	15	0	Salmonella	0
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	223	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - non-ready-to-eat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	30	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - ready-to-eat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	53	0	Salmonella	0
	Meat from broilers (Gallus gallus) - mechanically separated meat (MSM) - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	280	0	Salmonella	0
	Meat from broilers (Gallus gallus) - minced meat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	154	0	Salmonella	0
	Meat from pig - carcase - Slaughterhouse - Switzerland - food sample - carcase swabs - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	single (food/feed)	400	Square centimetre	N_A	ISO 6579-1:2017 Salmonella	925	0	Salmonella	0
	Meat from sheep - carcase - Slaughterhouse - Switzerland - food sample - carcase swabs - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	single (food/feed)	400	Square centimetre	N_A	ISO 6579-1:2017 Salmonella	236	0	Salmonella	0
	Meat from turkey - carcase - chilled - Slaughterhouse - Switzerland - food sample - neck skin - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	130	0	Salmonella	0
	Meat from turkey - fresh - skinned - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	16	0	Salmonella	0
	Meat from turkey - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	6	0	Salmonella	0
	Meat from turkey - fresh - with skin - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	2	0	Salmonella	0
	Meat from turkey - meat preparation - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	10	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	Sampling Details	Method	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Compound feedingstuffs for cattle - final product - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Compound feedingstuffs for cattle - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	153	0	Salmonella	0
	Compound feedingstuffs for fish - final product - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	4	0	Salmonella	0
	Compound feedingstuffs for fish - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Compound feedingstuffs for horses - final product - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Compound feedingstuffs for horses - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Compound feedingstuffs for pigs - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	5	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	32	0	Salmonella	0
	Feed material of cereal grain origin - maize derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	7	0	Salmonella	0
	Feed material of cereal grain origin - maize derived - Feed mill - Non European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	5	0	Salmonella	0
	Feed material of cereal grain origin - maize derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Feed material of oil seed or fruit origin - other oil seeds derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	4	0	Salmonella	0
	Feed material of oil seed or fruit origin - other oil seeds derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	3	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	27	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	11	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - Unknown - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	47	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Non European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - sunflower seed derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	12	0	Salmonella	0
	Feed material of oil seed or fruit origin - sunflower seed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	3	0	Salmonella	0
	Other feed material - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	7	0	Salmonella	0
	Other feed material - Feed mill - Non European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Other feed material - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0

Table STAPHYLOCOCCUS AUREUS METICILLIN RESISTANT (MRSA):Staphylococcus in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total Units Tested Attribute	Total Units Positive Attribute	Zoonoses	CC	Spa type	ML	Units positive
SWITZERLAND	Cattle (bovine animals) - calves (under 1 year) - Slaughterhouse - Switzerland - animal sample - nasal swab - Monitoring - Official sampling - Objective sampling	animal		Not Available	N_A	MRSA 1-step isolation method (EURL-AR protocol 2018)-excluding the selective enrichment step	307	11	Methicillin resistant Staphylococcus aureus (MRSA)				11
	Pigs - fattening pigs - Slaughterhouse - Switzerland - animal sample - nasal swab - Monitoring - Official sampling - Objective sampling	animal		Not Available	N_A	MRSA 1-step isolation method (EURL-AR protocol 2018)-excluding the selective enrichment step	310	166	Methicillin resistant Staphylococcus aureus (MRSA)				166

Table TOXOPLASMA:Toxoplasma in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Alpacas - farmed - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Alpine chamois - wild - Natural habitat - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Beavers - wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Cats - pet animals - Veterinary activities - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorensc ence assay tests (IFA)	animal	306	45	Toxoplasma gondii	45
	Cats - pet animals - Veterinary activities - Switzerland - animal sample - faeces - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Cats - pet animals - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	1	Toxoplasma gondii	1
	Cattle (bovine animals) - Veterinary activities - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Dogs - pet animals - Veterinary activities - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorensc ence assay tests (IFA)	animal	58	5	Toxoplasma gondii	5
	Dogs - pet animals - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Goats - Veterinary activities - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Toxoplasma gondii	0
	Goats - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Hares - zoo animal - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	1	Toxoplasma gondii	1
	Lynx - wild - Natural habitat - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0
	Lynx - wild - Natural habitat - Switzerland - animal sample - faeces - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	1	Toxoplasma gondii	1
	Lynx - wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	0	Toxoplasma gondii	0
	Mice - zoo animal - Zoo - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	5	4	Toxoplasma gondii	4
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	1	Toxoplasma gondii	1
	Sheep - Veterinary activities - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorensc ence assay tests (IFA)	animal	3	2	Toxoplasma gondii	2
	Sheep - Veterinary activities - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	1	Toxoplasma gondii	1
	Sheep - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Toxoplasma gondii	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma gondii	0

Table TRICHINELLA:Trichinella in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Badgers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	animal	15	0	Trichinella	0
	Cats - stray cats - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	animal	3	0	Trichinella	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	1	Trichinella britovi	1
	Lynx - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	23	2	Trichinella britovi	2
	Pigs - mixed herds - others - not raised under controlled housing conditions - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	2310961	0	Trichinella	0
	Solipeds, domestic - horses - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	764	0	Trichinella	0
	Wild boars - wild - Hunting - Switzerland - animal sample - Unspecified - Not applicable - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	8601	0	Trichinella	0
	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	32	5	Trichinella britovi	5

Table VIRUS:Virus in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	total units tested	total units positive	Zoonoses	N units positive
SWITZERLAND	Birds - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	9	0	Flavivirus	0
	Crows - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Flavivirus	0
	Oscine birds - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	4	0	Flavivirus	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	13	0	Flavivirus	0

FOODBORNE OUTBREAKS TABLES

Foodborne Outbreaks: summarized data

when numbers referring to cases, hospitalized people and deaths are reported as unknown, they will be not included in the sum calculation

		Outbreak strenght	Strong				Weak			
Causative agent	Food vehicle		N outbreaks	N human cases	N hospitalized	N deaths	N outbreaks	N human cases	N hospitalized	N deaths
Campylobacter, unspecified sp.	Unknown						1	2	0	0
Escherichia coli	Unknown						2	4	1	0
Histamine	Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated		1	2	0	0				
Listeria monocytogenes - serovar 1/2a	Unknown						1	23	23	5
Norovirus	Unknown						2	27	4	0
Parasites	Other processed food products and prepared dishes - sushi		1	3	0	0				
Salmonella spp., unspecified	Unknown						2	9	2	0
Salmonella Typhimurium	Mixed food						1	4	1	0
Unknown	Mixed food						3	7	0	0
	Buffet meals						1	26	0	0
	Unknown						23	138	3	1
	Water - potable water						1	0	0	0
Yersinia enterocolitica unspecified	Unknown						1	4	1	0

Strong Foodborne Outbreaks: detailed data

Causative agent	H	AG	VT	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
Histamine	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_1	Household	Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated	Raw Tuna	Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	2	0	0
Parasites	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_3	Unknown	Other processed food products and prepared dishes - sushi	Sushi	Descriptive epidemiological evidence;Descriptive epidemiological evidence	Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	3	0	0

Weak Foodborne Outbreaks: detailed data

Causative agent	H	AG	VT	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
Campylobacter, unspecified sp.	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_8	Household	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Domestic premises	Not Available	Not Available	Not Available	N_A	1	2	0	0
Escherichia coli	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_5	Unknown	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	2	4	1	0
Listeria monocytogenes - serovar 1/2a	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_7	General	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Multiple places of exposure in one country	Not Available	Not Available	Not Available	N_A	1	23	23	5
Norovirus	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_11	General	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	25	3	0
					CH_FBO_2023_12	Household	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	2	1	0
Salmonella spp., unspecified	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_10	General	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Domestic premises	Not Available	Not Available	Not Available	N_A	1	3	1	0

Causative agent	H	AG	VT	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
Salmonella spp., unspecified	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_6	General	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	6	1	0
Salmonella Typhimurium	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_4	General	Mixed food	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	4	1	0
Unknown	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_13	General	Unknown	N_A	Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	19	1	0
					CH_FBO_2023_14	General	Unknown	N_A	Descriptive epidemiological evidence	Temporary mass catering (fairs or festivals)	Not Available	Not Available	Not Available	At least 6 people have been identified. The exact number is unknown	1	unk	2	1
					CH_FBO_2023_15	General	Unknown	N_A	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	5	56	0	0
					CH_FBO_2023_16	Unknown	Unknown	N_A	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	8	21	0	0
					CH_FBO_2023_17	Unknown	Unknown	N_A	Descriptive epidemiological evidence	Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	4	0	0
					CH_FBO_2023_18	Unknown	Mixed food	N_A	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	2	5	0	0
					CH_FBO_2023_19	General	Buffet meals	N_A	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	26	0	0
					CH_FBO_2023_2	Unknown	Water - potable water	Ice cube	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	Small outbreak less than 5 cases	1	unk	unk	0

Causative agent	H	AG	VT	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
Unknown	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_20	Household	Mixed food	N_A	Descriptive epidemiological evidence	Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	2	0	0
					CH_FBO_2023_21	Unknown	Unknown	N_A	Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	3	7	0	0
					CH_FBO_2023_22	General	Unknown	N_A	Unknown	Hospital or medical care facility	Not Available	Not Available	Not Available	N_A	1	15	0	0
					CH_FBO_2023_23	General	Unknown	N_A	Unknown	Residential institutions (prison or boarding school)	Not Available	Not Available	Not Available	N_A	1	4	0	0
					CH_FBO_2023_24	General	Unknown	N_A	Unknown	School or kindergarten	Not Available	Not Available	Not Available	N_A	1	9	0	0
					CH_FBO_2023_25	Household	Unknown	N_A	Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	3	0	0
Yersinia enterocolitica unspecified	Not Available	Not Available	Not Available	Not Available	CH_FBO_2023_9	General	Unknown	N_A	Descriptive epidemiological evidence; Descriptive epidemiological evidence	Domestic premises	Not Available	Not Available	Not Available	N_A	1	4	1	0

Table Antimicrobial susceptibility testing of Campylobacter coli in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

	AM substance	Chloramphenicol	Ciprofloxacin	Ertapenem	Erythromycin	Gentamicin	Tetracycline
	ECOFF	**16**	**0.5**	**0.5**	**8**	**2**	**2**
	Lowest limit	**2**	**0.125**	**0.125**	**1**	**0.25**	**0.5**
	Highest limit	**64**	**32**	**4**	**512**	**16**	**64**
	N of tested isolates	**8**	**8**	**8**	**8**	**8**	**8**
MIC	**N of resistant isolates**	**0**	**4**	**2**	**0**	**0**	**4**
<=0.125			1	1			
0.25			3	1			
<=0.5							4
0.5				4		3	
<=1					5		
1				2		4	
2					3	1	
4		6					
8		2					
16			4				
32							1
>64							3

Table Antimicrobial susceptibility testing of Campylobacter coli in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

	AM substance	Chloramphenicol	Ciprofloxacin	Ertapenem	Erythromycin	Gentamicin	Tetracycline
	ECOFF	**16**	**0.5**	**0.5**	**8**	**2**	**2**
	Lowest limit	**2**	**0.125**	**0.125**	**1**	**0.25**	**0.5**
	Highest limit	**64**	**32**	**4**	**512**	**16**	**64**
	N of tested isolates	**241**	**241**	**241**	**241**	**241**	**241**
MIC	**N of resistant isolates**	**0**	**142**	**0**	**3**	**1**	**141**
<=0.125			89	217			
<=0.25						26	
0.25			9	17			
<=0.5							96
0.5			1	7		89	
<=1					227		
1						125	3
<=2		169					
2					9		1
4		64	15		2		5
8		8	65			1	28
16			52				52
32			10		2		33
64					1		14
>64							9

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

	AM substance	Chloramphenicol	Ciprofloxacin	Ertapenem	Erythromycin	Gentamicin	Tetracycline
	ECOFF	**16**	**0.5**	**0.5**	**4**	**2**	**1**
	Lowest limit	**2**	**0.125**	**0.125**	**1**	**0.25**	**0.5**
	Highest limit	**64**	**32**	**4**	**512**	**16**	**64**
	N of tested isolates	**154**	**154**	**154**	**154**	**154**	**154**
MIC	**N of resistant isolates**	**0**	**84**	**0**	**0**	**0**	**54**
<=0.125			62	149			
<=0.25						62	
0.25			6	3			
<=0.5							100
0.5			2	2		90	
<=1					154		
1						2	
<=2		150					
4		4	1				
8			27				
16			52				8
32			4				4
64							13
>64							29

ANTIMICROBIAL RESISTANCE TABLES FOR SALMONELLA

Table Antimicrobial susceptibility testing of Salmonella 4,12:-:- in Cattle (bovine animals)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								1	
			<=0.25					1				
			0.5						1			
			<=1			1						
			2									1
			<=4		1							
			<=8							1		
			8				1					

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
			ECOFF	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
			Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
			Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
			N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**
			MIC / **N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.03		1					
			<=0.25						1	1
			<=0.5	1						
			<=2					1		
			<=4			1				
			32				1			

Table Antimicrobial susceptibility testing of Salmonella Enteritidis in Cattle (bovine animals)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								2	
			0.03								3	
			<=0.25					5	3			
			0.5						2			
			<=1			1						3
			2			3						2
			<=4		5							
			4			1	3					
			<=8							5		
			8				2					

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
			ECOFF	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
			Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
			Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
			N of tested isolates	**5**	**5**	**5**	**5**	**5**	**5**	**5**
			N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	**MIC**							
			<=0.03		5					
			<=0.25						5	5
			<=0.5	5						
			<=2					5		
			<=4			5				
			16				1			
			32				4			

Table Antimicrobial susceptibility testing of Salmonella Enteritidis in Pigs

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	4	8	16	0.5	2	16	0.064	2
				Lowest limit	4	1	2	0.25	0.25	8	0.015	1
				Highest limit	128	32	64	4	8	64	8	16
				N of tested isolates	1	1	1	1	1	1	1	1
				N of resistant isolates	0	0	0	0	0	0	0	0
Not Available	Not Available	Not Available	0.03								1	
			<=0.25					1	1			
			<=1									1
			2			1						
			<=4		1							
			4				1					
			<=8							1		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.03			1					
			<=0.25							1	1
			<=0.5		1						
			<=2						1		
			<=4				1				
			128					1			

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

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
			ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**
			Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
			Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
			N of tested isolates	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**
			MIC	**N of resistant isolates**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
Not Available	Not Available	Not Available	<=0.015							2	
			0.03							13	
			<=0.25				13	7			
			0.5				2	5			
			<=1		6						9
			1					3			
			2		5						5
			<=4	15							
			4		3	11					1
			<=8						14		
			8			4					
			>32		1						
			>64						1		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	2	0.125	8	256	8	0.5	2
				Lowest limit	0.5	0.03	4	8	2	0.25	0.25
				Highest limit	16	16	64	512	32	8	16
				N of tested isolates	15	15	15	15	15	15	15
				N of resistant isolates	0	0	0	1	1	0	0
Not Available	Not Available	Not Available	<=0.03			14					
			0.064			1					
			<=0.25							8	14
			<=0.5		11						
			0.5							7	1
			1		4						
			<=2						14		
			<=4				15				
			16					4			
			32					9			
			>32						1		
			128					1			
			>512					1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Cattle (bovine animals)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	4	8	16	0.5	2	16	0.064	2
				Lowest limit	4	1	2	0.25	0.25	8	0.015	1
				Highest limit	128	32	64	4	8	64	8	16
				N of tested isolates	9	9	9	9	9	9	9	9
				N of resistant isolates	0	6	0	0	0	0	0	0
Not Available	Not Available	Not Available	<=0.015								2	
			0.03								7	
			<=0.25					9	2			
			0.5						6			
			<=1									8
			1						1			
			2			3						1
			<=4		9							
			4				8					
			<=8							9		
			8				1					
			>32			6						

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
			ECOFF	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
			Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
			Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
			N of tested isolates	**9**	**9**	**9**	**9**	**9**	**9**	**9**
			MIC / **N of resistant isolates**	**0**	**0**	**0**	**6**	**9**	**0**	**0**
Not Available	Not Available	Not Available	<=0.03		6					
			0.064		2					
			0.125		1					
			<=0.25						3	9
			<=0.5	9						
			0.5						6	
			<=4			5				
			8			4				
			32				1			
			>32					9		
			64				2			
			>512				6			

ANTIMICROBIAL RESISTANCE TABLES FOR ESCHERICHIA COLI

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON pnl2

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

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

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
			ECOFF	**0.125**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**16**
			Lowest limit	**0.064**	**0.25**	**0.064**	**0.5**	**0.25**	**0.125**	**0.015**	**0.125**	**0.03**	**0.5**
			Highest limit	**32**	**64**	**64**	**64**	**128**	**128**	**2**	**16**	**16**	**128**
			N of tested isolates	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
			N of resistant isolates	**5**	**6**	**1**	**4**	**6**	**1**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	**MIC**										
			8				2	3	1				3
			16	1			2						3
			32	1	3		1						
			64				1						
			>64		2								

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**190**	**190**	**190**	**190**	**190**	**190**	**190**	**190**
				N of resistant isolates	**0**	**45**	**2**	**6**	**6**	**18**	**5**	**0**
Not Available	Not Available	Not Available	<=0.015								165	
			0.03								20	
			<=0.25					184	173			
			0.5						11		2	
			<=1			2						189
			1						1		3	
			<=2				13					
			2			21			2			1
			<=4		179							
			4			107	91	1				
			>4					5				
			<=8							169		
			8		11	15	77		3			
			16			1	7			3		
			32				1			1		
			>32			44						
			64				1					
			>64							17		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**190**	**190**	**190**	**190**	**190**	**190**	**190**
Not Available	Not Available	Not Available		**N of resistant isolates**	**4**	**0**	**5**	**50**	**51**	**0**	**13**
				<=0.03		188					
				0.064		2					
				<=0.25						184	141
				<=0.5	108						
				0.5						6	33
				1	64						3
				<=2					134		
				2	14						
				<=4			185				
				4					5		
				<=8				52			
				16			4	65			
				>16	4						13
				32			1	17			
				>32					51		
				64				6			
				128				3			
				>512				47			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON pnl2

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
			ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	16
			Lowest limit	0.064	0.25	0.064	0.5	0.25	0.125	0.015	0.125	0.03	0.5
			Highest limit	32	64	64	64	128	128	2	16	16	128
			N of tested isolates	100	100	100	100	100	100	100	100	100	100
			N of resistant isolates	60	100	46	48	98	45	0	0	0	1
Not Available	Not Available	Not Available	MIC										
			<=0.015							62			
			<=0.03									100	
			0.03							33			
			<=0.064	7		45							
			0.064							5			
			<=0.125						13		25		
			0.125	33		9							
			0.25	5					38		70		
			0.5	2		4		2	4		5		
			1	1	12	29		5	1				
			2	4	20	9	2	13	10				
			4	8	10	3	27	20	23				23
			8	18	4		23	42	10				57

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
			ECOFF		**0.125**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**16**
			Lowest limit		**0.064**	**0.25**	**0.064**	**0.5**	**0.25**	**0.125**	**0.015**	**0.125**	**0.03**	**0.5**
			Highest limit		**32**	**64**	**64**	**64**	**128**	**128**	**2**	**16**	**16**	**128**
			N of tested isolates		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
			N of resistant isolates		**60**	**100**	**46**	**48**	**98**	**45**	**0**	**0**	**0**	**1**
Not Available	Not Available	Not Available	16		9	4		16	14					19
			32		6	6	1	16	4	1				1
			>32		7									
			64			16		10						
			>64			28		6						

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes: Not Available

AMPC Genes: Not Available

CARBA Genes: Not Available

MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
	ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
	N of tested isolates	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
	N of resistant isolates	**0**	**100**	**7**	**100**	**98**	**42**	**51**	**0**
<=0.015								46	
0.03								3	
0.125								8	
0.25								16	
0.5						2		16	
<=1									100
1					10	7		5	
<=2				1					
2					25	12			
<=4	94								
4				32	7	30			
>4					58				
<=8							57		
8	6			56		34		3	
>8						15		3	
16				4			1		
32				1					
>32		100							
64				4			4		
>64				2			38		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Not Available	Not Available	Not Available		**N of resistant isolates**	**26**	**0**	**24**	**85**	**84**	**0**	**43**
				<=0.03		100					
				<=0.25						86	38
				<=0.5	43						
				0.5						14	17
				1	27						2
				<=2					13		
				2	4						
				<=4			59				
				4					2		
				<=8				7			
				8	2		17		1		
				16	4		6	5			
				>16	20						43
				32			4	2			
				>32					84		
				64			3	1			
				>64			11				
				>512				85			

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 - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	8	8	16	0.25	0.5	16	0.064	2
				Lowest limit	4	1	2	0.25	0.25	8	0.015	1
				Highest limit	128	32	64	4	8	64	8	16
				N of tested isolates	201	201	201	201	201	201	201	201
				N of resistant isolates	0	35	1	0	0	9	9	0
Not Available	Not Available	Not Available	<=0.015								183	
			0.03								9	
			0.125								2	
			<=0.25					201	190			
			0.25								3	
			0.5						11		2	
			<=1			2						201
			<=2				5					
			2			52						
			<=4		194							
			4			99	119				1	
			<=8							189		
			8		7	13	73				1	
			16			1	3			3		
			32				1			4		
			>32			34						
			64							2		
			>64							3		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**201**	**201**	**201**	**201**	**201**	**201**	**201**
Not Available	Not Available	Not Available		**N of resistant isolates**	**3**	**0**	**8**	**55**	**32**	**0**	**28**
			<=0.03			200					
			0.064			1					
			<=0.25							188	143
			<=0.5		126						
			0.5							13	27
			1		67						3
			<=2						167		
			2		5						
			<=4				190				
			4		1				2		
			<=8					55			
			8				3				
			16					47			
			>16		2						28
			32				1	35	2		
			>32						30		
			64					9			
			>64				7				
			>512					55			

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 - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON pnl2

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
			ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	16
			Lowest limit	0.064	0.25	0.064	0.5	0.25	0.125	0.015	0.125	0.03	0.5
			Highest limit	32	64	64	64	128	128	2	16	16	128
			N of tested isolates	19	19	19	19	19	19	19	19	19	19
			N of resistant isolates	14	19	6	7	19	6	0	0	0	0
Not Available	Not Available	Not Available	MIC										
			<=0.015							15			
			<=0.03									19	
			0.03							4			
			<=0.064			11							
			<=0.125						4		7		
			0.125	5		2							
			0.25	1					8		12		
			0.5						1				
			1		1	3		1					
			2	1	3	3	2	3	1				
			4	3	2		6	6	4				4
			8	2			4	7	1				14

ESBL Genes	AMPC Genes	CARBA Genes	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
			ECOFF	**0.125**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**16**
			Lowest limit	**0.064**	**0.25**	**0.064**	**0.5**	**0.25**	**0.125**	**0.015**	**0.125**	**0.03**	**0.5**
			Highest limit	**32**	**64**	**64**	**64**	**128**	**128**	**2**	**16**	**16**	**128**
			N of tested isolates	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
			N of resistant isolates	**14**	**19**	**6**	**7**	**19**	**6**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	**MIC**										
			16	1			4	1					1
			32	4	2		1	1					
			>32	2									
			64		5		2						
			>64		6								

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 - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
				N of resistant isolates	**0**	**19**	**1**	**19**	**19**	**4**	**7**	**0**
Not Available	Not Available	Not Available	<=0.015								12	
			0.25								6	
			0.5								1	
			<=1									19
			1					1	2			
			<=2				1					
			2					5	3			
			<=4		18							
			4				6		8			
			>4					13				
			<=8							15		
			8		1		10		5			
			>8						1			
			16				1					
			32							1		
			>32			19						
			64							1		
			>64				1			2		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**19**	**19**	**19**	**19**	**19**	**19**	**19**
Not Available	Not Available	Not Available		**N of resistant isolates**	**2**	**0**	**4**	**12**	**12**	**0**	**9**
			<=0.03			19					
			<=0.25							16	6
			<=0.5		12						
			0.5							3	4
			1		5						
			<=2						7		
			<=4				13				
			4		1						
			<=8					4			
			8				2				
			16					2			
			>16		1						9
			32						1		
			>32						11		
			64					1			
			>64				4				
			>512					12			

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

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON pnl2

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
				ECOFF	**0.125**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**16**
				Lowest limit	**0.064**	**0.25**	**0.064**	**0.5**	**0.25**	**0.125**	**0.015**	**0.125**	**0.03**	**0.5**
				Highest limit	**32**	**64**	**64**	**64**	**128**	**128**	**2**	**16**	**16**	**128**
				N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
				N of resistant isolates	**2**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								2			
			<=0.03										2	
			<=0.064				2							
			<=0.125									1		
			0.25							2		1		
			4		1			2						
			8						2					2
			32		1									
			64			1								
			>64			1								

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

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
				N of resistant isolates	**0**	**2**	**0**	**2**	**2**	**0**	**2**	**0**
Not Available	Not Available	Not Available	0.25								1	
			0.5								1	
			<=1									2
			<=4		2							
			4				1					
			>4					2				
			<=8							2		
			8				1		2			
			>32			2						

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**
				N of resistant isolates	**0**	**0**	**1**	**1**	**1**	**0**	**1**
Not Available	Not Available	Not Available		<=0.03		2					
				<=0.25						2	1
				<=0.5	1						
				1	1						
				<=2					1		
				8			1				
				16				1			
				>16							1
				32			1		1		
				>512				1			

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

Sampling Stage: Border Control Posts

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Argentina

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
				N of resistant isolates	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								5	
			<=0.25					5	5			
			<=1									5
			2			1						
			<=4		5							
			4			3	2					
			<=8							4		
			8				2					
			16			1	1			1		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**5**	**5**	**5**	**5**	**5**	**5**	**5**
				N of resistant isolates	**0**	**0**	**0**	**1**	**1**	**0**	**0**
Not Available	Not Available	Not Available		<=0.03		5					
				<=0.25						4	4
				<=0.5	3						
				0.5						1	1
				1	2						
				<=2					4		
				<=4			5				
				<=8				2			
				16				2	1		
				>512				1			

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

Sampling Stage: Border Control Posts

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Australia

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**
				N of resistant isolates	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								7	
			0.03								2	
			<=0.25					9	9			
			<=1			1						9
			2			2						
			<=4		7							
			4			2	3					
			<=8							9		
			8		2	2	5					
			16				1					
			32			1						
			>32			1						

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**9**	**9**	**9**	**9**	**9**	**9**	**9**
			MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available		<=0.03		7					
				0.064		2					
				<=0.25						9	7
				<=0.5	5						
				0.5							2
				1	2						
				<=2					9		
				2	2						
				<=4			9				
				<=8				2			
				16				3			
				32				4			

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

Sampling Stage: Border Control Posts

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:New Zealand

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								2	
			<=0.25					2	2			
			<=1									2
			2			1						
			<=4		2							
			4			1	2					
			<=8							2		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Not Available	Not Available	Not Available		**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			<=0.03			2					
			<=0.25							2	1
			<=0.5		1						
			0.5								1
			1		1						
			<=2						2		
			<=4				2				
			<=8					1			
			32					1			

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

Sampling Stage: Border Control Posts

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:United States

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								1	
			<=0.25					1				
			0.5						1			
			<=1									1
			<=4	1								
			4		1							
			<=8							1		
			8				1					

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**1**	**1**	**1**	**1**	**1**	**1**	**1**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.03			1					
			<=0.25							1	1
			<=0.5		1						
			<=2						1		
			<=4				1				
			<=8					1			

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

Sampling Stage: Border Control Posts

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Uruguay

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								2	
			<=0.25					2	2			
			<=1									2
			<=2				1					
			2			1						
			<=4		2							
			4			1	1					
			<=8							2		

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Not Available	Not Available	Not Available		**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			<=0.03			2					
			<=0.25							2	1
			<=0.5		1						
			0.5								1
			1		1						
			<=2						2		
			<=4				2				
			<=8					1			
			16					1			

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

Sampling Stage: Border Control Posts

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:United Kingdom

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
				N of resistant isolates	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.015								5	
			<=0.25					5	5			
			<=1									5
			2			1						
			<=4		5							
			4			3	4					
			<=8							5		
			16				1					
			>32			1						

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**5**	**5**	**5**	**5**	**5**	**5**	**5**
				N of resistant isolates	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Not Available	Not Available	Not Available	<=0.03			5					
			<=0.25							5	3
			<=0.5		3						
			0.5								2
			1		2						
			<=2						5		
			<=4				5				
			<=8					2			
			16					1			
			32					2			

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 - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON pnl2

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
			ECOFF		0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	16
			Lowest limit		0.064	0.25	0.064	0.5	0.25	0.125	0.015	0.125	0.03	0.5
			Highest limit		32	64	64	64	128	128	2	16	16	128
			N of tested isolates		3	3	3	3	3	3	3	3	3	3
			N of resistant isolates		1	3	3	3	3	3	0	0	0	0
Not Available	Not Available	Not Available	<=0.015								2			
			<=0.03										3	
			0.03								1			
			<=0.064		1									
			<=0.125									1		
			0.125		1									
			0.25		1							2		
			0.5				1							
			1			1	1							
			2			1	1		1	2				
			4			1			1	1				
			8						1					2
			16					1						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 - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin
				ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**
				Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**
				Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**
				N of tested isolates	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
				N of resistant isolates	**0**	**3**	**0**	**3**	**3**	**0**	**1**	**0**
Not Available	Not Available	Not Available	<=0.015								2	
			0.25								1	
			<=1									3
			1					1				
			2					1				
			<=4	3								
			4				2	1	2			
			<=8							3		
			8				1		1			
			>32			3						

ESBL Genes	AMPC Genes	CARBA Genes	MIC	AM substance	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
				ECOFF	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
				Lowest limit	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
				Highest limit	**16**	**16**	**64**	**512**	**32**	**8**	**16**
				N of tested isolates	**3**	**3**	**3**	**3**	**3**	**3**	**3**
				N of resistant isolates	**0**	**0**	**1**	**1**	**1**	**0**	**1**
Not Available	Not Available	Not Available	<=0.03			3					
			<=0.25							2	2
			<=0.5	2							
			0.5							1	
			1	1							
			<=2						2		
			<=4				2				
			<=8					1			
			16					1			
			>16								1
			>32						1		
			64				1				
			>512					1			

OTHER ANTIMICROBIAL RESISTANCE TABLES

Table Antimicrobial susceptibility testing of Methicillin resistant Staphylococcus aureus (MRSA) in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - nasal swab

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

spa type	CC	T	MIC	AM substance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin
				ECOFF	**4**	**16**	**1**	**0.25**	**1**	**0.5**	**2**	**8**	**4**	**1**	**0.12**	**1**	**0.032**
				Lowest limit	**0.5**	**4**	**0.25**	**0.125**	**0.25**	**0.25**	**0.5**	**4**	**1**	**0.5**	**0.064**	**0.5**	**0.016**
				Highest limit	**16**	**64**	**8**	**4**	**8**	**4**	**16**	**32**	**8**	**256**	**1**	**4**	**0.5**
				N of tested isolates	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
				N of resistant isolates	**11**	**2**	**3**	**6**	**7**	**0**	**2**	**3**	**0**	**0**	**11**	**1**	**0**
	398		<=0.016														10
			<=0.125					4									
			<=0.25				3		2	10							
			<=0.5								8			10		5	
			0.5				4		2								
			<=1										5				
			1													4	
			>1												10		
			2				3						5				
			<=4			3						8					
			4													1	
			>4					6									
			8		2	5					1						

spa type	CC	T	MIC	AM substance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin
				ECOFF	**4**	**16**	**1**	**0.25**	**1**	**0.5**	**2**	**8**	**4**	**1**	**0.12**	**1**	**0.032**
				Lowest limit	**0.5**	**4**	**0.25**	**0.125**	**0.25**	**0.25**	**0.5**	**4**	**1**	**0.5**	**0.064**	**0.5**	**0.016**
				Highest limit	**16**	**64**	**8**	**4**	**8**	**4**	**16**	**32**	**8**	**256**	**1**	**4**	**0.5**
				N of tested isolates	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
				N of resistant isolates	**11**	**2**	**3**	**6**	**7**	**0**	**2**	**3**	**0**	**0**	**11**	**1**	**0**
	398		>8						6								
			16		6												
			>16		2						1						
			32			2											
			>32									2					
			<=64														
			<=0.016														1
			<=0.125					1									
			<=0.25				1			1							
			<=0.5								1			1			
			<=1														
			1													1	
			>1												1		
			2										1				
			8			1											
			>8						1								
			16		1												
			>16														
			>32									1					
			<=64														

spa type	CC	T	MIC	AM substance	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
				ECOFF	**16**	**128**	**1**	**2**	**2**	**2**
				Lowest limit	**4**	**64**	**0.5**	**0.5**	**1**	**1**
				Highest limit	**32**	**512**	**16**	**4**	**16**	**8**
				N of tested isolates	**11**	**11**	**11**	**11**	**11**	**11**
				N of resistant isolates	**5**	**0**	**11**	**1**	**3**	**0**
	398		<=0.016							
			<=0.125							
			<=0.25							
			<=0.5					8		
			0.5							
			<=1						7	10
			1					1		
			>1							
			2							
			<=4							
			4							
			>4					1		
			8		4					
			>8							
			16		2					
			>16				10		3	
			32							
			>32		4					
			<=64			10				
			<=0.016							
			<=0.125							
			<=0.25							
			<=0.5							
			<=1						1	1
			1					1		
			>1							
			2							
			8							
			>8							
			16							

spa type	CC	T	MIC	AM substance	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
				ECOFF	**16**	**128**	**1**	**2**	**2**	**2**
				Lowest limit	**4**	**64**	**0.5**	**0.5**	**1**	**1**
				Highest limit	**32**	**512**	**16**	**4**	**16**	**8**
				N of tested isolates	**11**	**11**	**11**	**11**	**11**	**11**
				N of resistant isolates	**5**	**0**	**11**	**1**	**3**	**0**
			>16				1			
			>32		1					
			<=64			1				

Table Antimicrobial susceptibility testing of Methicillin resistant Staphylococcus aureus (MRSA) in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - nasal swab

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method: Dilution - sensititre

Country Of Origin:Switzerland

Sampling Details:N_A

spa type	CC	T	MIC	AM substance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin
				ECOFF	**4**	**16**	**1**	**0.25**	**1**	**0.5**	**2**	**8**	**4**	**1**	**0.12**	**1**	**0.032**
				Lowest limit	**0.5**	**4**	**0.25**	**0.125**	**0.25**	**0.25**	**0.5**	**4**	**1**	**0.5**	**0.064**	**0.5**	**0.016**
				Highest limit	**16**	**64**	**8**	**4**	**8**	**4**	**16**	**32**	**8**	**256**	**1**	**4**	**0.5**
				N of tested isolates	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**
				N of resistant isolates	**166**	**43**	**68**	**69**	**42**	**0**	**13**	**17**	**0**	**1**	**166**	**66**	**0**
	398		<=0.016														164
			0.03														2
			<=0.125					94									
			<=0.25				57		78	154							
			0.25					3									
			<=0.5								147			164		74	
			0.5				35		44	12							
			<=1										18				
			1				6		2		5			1		26	
			>1												166		
			2				3	1			1		148	1		8	
			<=4			9						145					
			4				2	20	3							54	
			>4					48								4	
			8		12	114	26		4		2	4					
			>8				37		35								

spa type	CC	T	MIC	AM substance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin
				ECOFF	**4**	**16**	**1**	**0.25**	**1**	**0.5**	**2**	**8**	**4**	**1**	**0.12**	**1**	**0.032**
				Lowest limit	**0.5**	**4**	**0.25**	**0.125**	**0.25**	**0.25**	**0.5**	**4**	**1**	**0.5**	**0.064**	**0.5**	**0.016**
				Highest limit	**16**	**64**	**8**	**4**	**8**	**4**	**16**	**32**	**8**	**256**	**1**	**4**	**0.5**
				N of tested isolates	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**	**166**
				N of resistant isolates	**166**	**43**	**68**	**69**	**42**	**0**	**13**	**17**	**0**	**1**	**166**	**66**	**0**
	398		16		120						6	2					
			>16		34						5						
			32			10											
			>32									15					
			<=64														
			64			33											
			128														

spa type	CC	T	MIC	AM substance	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
				ECOFF	**16**	**128**	**1**	**2**	**2**	**2**
				Lowest limit	**4**	**64**	**0.5**	**0.5**	**1**	**1**
				Highest limit	**32**	**512**	**16**	**4**	**16**	**8**
				N of tested isolates	**166**	**166**	**166**	**166**	**166**	**166**
				N of resistant isolates	**50**	**0**	**158**	**65**	**68**	**0**
	398		<=0.016							
			0.03							
			<=0.125							
			<=0.25							
			0.25							
			<=0.5				8	72		

spa type	CC	T	MIC	AM substance	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
				ECOFF	**16**	**128**	**1**	**2**	**2**	**2**
				Lowest limit	**4**	**64**	**0.5**	**0.5**	**1**	**1**
				Highest limit	**32**	**512**	**16**	**4**	**16**	**8**
				N of tested isolates	**166**	**166**	**166**	**166**	**166**	**166**
				N of resistant isolates	**50**	**0**	**158**	**65**	**68**	**0**
	398		0.5							
			<=1						97	166
			1					28		
			>1							
			2					1	1	
			<=4		26					
			4							
			>4					65		
			8		68					
			>8							
			16		22					
			>16				158		68	
			32		2					
			>32		48					
			<=64			164				
			64							
			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
CARBAMON	Cattle (bovine animals) - calves (under 1 year)	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Slaughterhouse	N_A	Monitoring - EFSA specifications	Official sampling	animal sample - caecum	slaughter animal batch	Switzerland	N_A	306	0
	Meat from bovine animals - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Border Control Posts	N_A	Monitoring - EFSA specifications	Official sampling	food sample - meat	batch (food/feed)	Argentina	N_A	6	0
										Australia	N_A	20	0
										Brazil	N_A	2	0
										Canada	N_A	4	0
										Chile	N_A	2	0
										Japan	N_A	4	0
										New Zealand	N_A	2	0
										United Kingdom (excluding Northern Ireland)	N_A	10	0
										United States	N_A	6	0
										Uruguay	N_A	2	0

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 - EFSA specifications	Official sampling	food sample - meat	single (food/feed)	Argentina	N_A	5	0
										Canada	N_A	1	0
										France	N_A	1	0
										Ireland	N_A	12	0
										Lithuania	N_A	4	0
										Paraguay	N_A	1	0
										Switzerland	N_A	269	0
										Uruguay	N_A	15	0
	Meat from pig - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring - EFSA specifications	Official sampling	food sample - meat	single (food/feed)	Switzerland	N_A	309	0
	Pigs - fattening pigs	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Slaughterhouse	N_A	Monitoring - EFSA specifications	Official sampling	animal sample - caecum	slaughter animal batch	Switzerland	N_A	308	0
ESBL MON	Meat from bovine animals - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Border Control Posts	N_A	Monitoring - EFSA specifications	Official sampling	food sample - meat	batch (food/feed)	Argentina	N_A	6	0
										Australia	N_A	20	0
										Brazil	N_A	2	0
										Canada	N_A	4	0
										Chile	N_A	2	0
										Japan	N_A	4	0
										New Zealand	N_A	2	0
										United Kingdom (excluding Northern Ireland)	N_A	10	0
										United States	N_A	6	0
										Uruguay	N_A	2	0

Latest Transmission set

Table Name	Last submitted dataset transmission date
Antimicrobial Resistance	26-Nov-2024
Esbl	17-Jul-2024
Animal Population	17-Jul-2024
Disease Status	17-Jul-2024
Food Borne Outbreaks	17-Jul-2024
Prevalence	17-Jul-2024

ZOONOSES MONITORING

EUROPEAN FOOD SAFETY AUTHORITY

SWITZERLAND

TEXT FORMS FOR THE 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 2023

Table of contents

1. Institutions and Laboratories involved in zoonoses monitoring and reporting in animals

1. Centre for Zoonoses, Bacterial Animal Diseases Antimicrobial Resistance (ZOBA) at the Institute of Veterinary Bacteriology, Vetsuisse Faculty University of Bern National Reference Laboratory for Brucellosis, Salmonellosis, Campylobacteriosis, Listeriosis, Tularemia, Coxiellosis, Antimicrobial Resistance
2. Institute for Food Safety and Hygiene (ILS), Vetsuisse Faculty University of Zurich, National Reference Laboratory for STEC
3. Section of Veterinary Bacteriology (VB), Institute for Food Safety and Hygiene, Vetsuisse Faculty University of Zurich National Reference Laboratory for Tuberculosis
4. Institute of Parasitology IPB, Vetsuisse Faculty and Faculty of Medicine University of Bern National Reference Laboratory for Trichinellosis, Toxoplasmosis
5. Swiss Rabies Center (SRC) at the Institute of Immunology and Virology (IVI) in cooperation with Vetsuisse Faculty, University of Bern National Reference Laboratory for Rabies
6. Institute of Parasitology (IPZ), Vetsuisse Faculty University of Zurich, National Reference Laboratory for Echinococcosis
7. Research Station Agroscope Liebefeld-Posieux (ALP) Official feed inspection service and Listeria Monitoring
8. Institute for Virology and Immunology (IVI) National Reference Laboratory for West Nil Fever
9. National Reference Center for Poultry and Rabbit Diseases, University of Zurich (NRGK) West Nile Fever data in birds, Salmonella-infection in poultry

Institutions and Laboratories involved in zoonoses monitoring and reporting in humans

1. National Reference Centre for Enteropathogenic Bacteria and Listeria (NENT) at the Institute for Food Safety and Hygiene at University of Zurich. National Reference Laboratory for Salmonellosis, Campylobacteriosis, Listeriosis, Yersiniosis, STEC
2. National Centre for Emerging Viral Diseases (NAVI/CRIVE), University of Geneva. National Reference Laboratory for West Nil Fever
3. National Centre for Mycobacteria (NZM), University of Zurich. National Reference Laboratory for Mycobacteria
4. National Reference Center for tick-borne diseases CNRT. National Reference Laboratory for Coxiellosis.
5. National Reference Centre for Highly Pathogenic Bacteria (NABA). National Reference Laboratory for Brucellosis, Tularemia

Short description of the institutions and laboratories involved in data collection and reporting

2. Animal population

2.1. Sources of information and the date(s) (months, years) the information relates to [a]

Number of animals held in farms in Switzerland in 2023 (data status May 2024). Number of animals slaughtered in 2023.
Living animals and herds: Coordinated census of agriculture. Swiss federal office of agriculture, Swiss federal office of statistics and the animal movement database. Slaughtered animals: Official meat inspection statistics (FSVO) and monthly agricultural statistics (Swiss Farmer's Federation).

2.2. Definitions used for different types of animals, herds, flocks and holdings as well as the production types covered

The indicated number of holdings is identical to the number of farms holding respective species. Agriculture census counts the number of farms.

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

In general, the number of animal holdings is decreasing slightly year by year (exception in 2023: holdings with sheep, laying hens, broilers and turkeys).
Poultry industry: the number of holdings with laying hens increased by 9.3% and the one with broilers by 2.7%. Over 90% of poultry meat is produced by 4 major meat-producing companies. The number of holdings with breeders have a large fluctuation due to a large number of very small flocks on farms, which are counted in agricultural census. The number of holdings with more than 250 breeders was 44 (last year, 38), keeping over 90% of all breeders.

2.4. Geographical distribution and size distribution of the herds, flocks and holdings [b]

Average size of the farms in 2023: 48 cattle, 262 pigs, 45 sheep, 12 goats, 179 laying hens and 7640 broilers.

2.5. Additional information

Hatching eggs for the meat production line are imported on a large scale to Switzerland. In 2023, the number of imported fertilized eggs of the broiler type decreased by 4.2 % to 36.9 million and the imported fertilized eggs of the fattening turkey type decreased by 37.1 % to 310787 hatching eggs. Day-old-chicks are imported to Switzerland mainly from the breeding type. In total, 344544 day-old-chicks of the breeding type were imported in 2023. Compared to 2022, the import of day-old-chicks of the breeding type decreased by 14%. There are a few imports of day-old chicks of laying hens, which decreased to 58266 in 2023 (instead of 58614 in 2022). As in 2022, no day-old chicks of the broiler type were imported to Switzerland.

(a): National identification and registration system(s), source of reported statistics (Eurostat, others)
(b): Link to website with density maps if available, tables with number of herds and flocks according to geographical area

3. General evaluation*: Brucella

3.1. History of the disease and/or infection in the country[(a)]

Brucellosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). The number of detections of *Brucella* (*B.*) spp. in humans has been low for many years.
Brucellosis in animals is notifiable (TSV, Article 3: disease to be eradicated: bovine brucellosis since 1956, in sheep and goats since 1966; Article 4: disease to be controlled: brucellosis in rams).
Government measures are applied to control brucellosis in sheep and goats (TSV, Articles 190-195), in cattle (TSV, Articles 150-157), in pigs (TSV, Articles 207 – 211) and in rams (*B. ovis*, TSV, Articles 233-236). Cattle, pigs, sheep and goats must be tested for brucellosis in cases where the causes of abortion are being investigated (TSV, Article 129). Vaccination is prohibited since 1961. Switzerland is officially recognized as free of brucellosis in cattle, sheep and goats by the EU (Bilateral Agreement on Agriculture, Veterinary Annex). Requirements of section 8.4.4 and 8.4.6 of the WOAH International Animal Health Code are fulfilled since 1963.

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

In 2023, nine brucellosis cases in humans were reported (2022: six cases). In five cases *B. melitensis* were identified. Six of the nine cases were women aged between 5 and 72 years. In the last 10 years, the notified cases ranged from one to nine cases per year.
In 2023, no cases of zoonotic brucellosis in animals were reported by the cantonal veterinarians. In the annual national survey of 2023, all blood samples from sheep and goats tested negative for *B. melitensis*.
Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.

3.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

National surveys on an annual basis are carried out to document freedom from brucellosis in sheep and goat.

3.4. Additional information

See previous national reports for additional information and website of the FSVO.

*** For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

4. Description of Monitoring/Surveillance/Control programmes system*: Cattle and *Brucella abortus/melitensis/suis*

4.1. Monitoring/Surveillance/Control programmes system[(a)]

Switzerland is officially acknowledged as free from bovine brucellosis since 1959. Bovine brucellosis is notifiable since 1956. Requirements of section 8.4.4 and 8.4.6 of the WOAH International Animal Health Code are fulfilled since 1963. Free status is recognized by EU (Bilateral Agreement on Agriculture, Veterinary Annex).

4.2. Measures in place[(b)]

Vaccination is prohibited. Actions to be taken in suspicious farms are the ban of all animal traffic and investigation of the whole herd as well as the placenta of calving cows. In confirmed cases (herds) all diseased cattle have to be killed. All placentas, abortion material and the milk of diseased and suspicious cows have to be disposed of. The barn has to be disinfected. Official meat inspection includes each carcass, its organs and lymphatic tissues on the prevalence of abnormal alterations. Whole carcasses need to be destroyed if lesions typical for brucellosis are confirmed by a laboratory test. Without lesions or in case of unclear laboratory results, the udder, genitals and the blood must be destroyed (VHyS, Annex 7).

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

Notification of suspicious cases and outbreaks is mandatory. Brucellosis in bovine animals is regulated as zoonosis to be eradicated (TSV, Art. 150 - Art. 157).

4.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

In 2023, no cases of *B. abortus/melitensis/suis* were reported to the FSVO by cantonal veterinarians. There are no observations that would challenge the freedom of Swiss cattle population from brucellosis.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

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

5. Description of Monitoring/Surveillance/Control programmes system*: Sheep and Goats and *Brucella melitensis/abortus/suis*

5.1. Monitoring/Surveillance/Control programmes system[(a)]

Switzerland is officially acknowledged as free from ovine and caprine brucellosis.

5.2. Measures in place[(b)]

Vaccination is prohibited. Actions to be taken in suspicious farms are ban of all animal traffic and the investigation of the whole herd. In confirmed cases the whole herd has to be killed immediately. All placentas, abortion material and the milk of diseased and suspicious animals have to be disposed of. The barn has to be disinfected. Official meat inspection is investigating each carcass, its organs and lymphatic tissues on the prevalence of abnormal alterations. Whole carcasses need to be destroyed if lesions typical for brucellosis could be confirmed by a laboratory test. Without lesions or in case of unclear laboratory results, the udder, genitals and the blood must be destroyed (VHyS, Annex 7).

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

Notification of suspicious cases and outbreaks is mandatory. Brucellosis in sheep and goats is regulated as zoonosis to be eradicated (TSV, Art. 190 - Art. 195).

5.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

In the annual national survey of 2023, a randomized sample of 406 sheep farms (5202 blood samples) and 311 goat farms (2125 blood samples) tested negative for *B. abortus/melitensis/suis* using serological tests.
In addition, no cases of *B. melitensis/abortus/suis* in sheep and goats were reported to the FSVO by cantonal veterinarians in 2023.
There are no observations that would challenge the freedom of Swiss sheep and goat population from brucellosis.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

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

6. General evaluation*: *Mycobacterium*

6.1. History of the disease and/or infection in the country[(a)]

Tuberculosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Human tuberculosis cases transmitted by infected cattle through the consumption of raw milk are very rare nowadays. They correspond to less than 2% of all reported human tuberculosis cases.
The detection of tuberculosis in all mammals must be reported (TSV, Art. 5); in animals of the bovine species, buffalo and bison, tuberculosis is one of the animal diseases to be eradicated (TSV, Art. 3 and Art. 158-165a).
Vaccination is prohibited. Requirements of section 8.11.4 of the WOAH International Animal Health Code are fulfilled. Free status is recognized by EU (Bilateral Agreement on Agriculture, Veterinary Annex).

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

In 2023, 10 human cases (M. bovis) were reported. M. bovis and M. caprae are reported on a low scale (not more than 13 cases per year since 2005). As Swiss livestock is recognized free of bovine tuberculosis today, human cases are anticipated to be mainly attributable to stays abroad or to the consumption of foreign food products. Otherwise, an infection in Switzerland cannot be excluded in the elderly people by the consumption of unpasteurized milk during their childhood, when the disease in Swiss cattle was more frequent.

In 2023, no tuberculosis outbreaks in cattle were reported to the FSVO by the cantonal veterinarians. Tuberculosis cases in animals are reported extremely rarely. In 2013 and 2014, a total of 11 cases were reported due to two unusual outbreaks in cattle (one due to M. bovis, the other due to M. caprae). Risk factors for the incursion of the disease are international trade with animals and summer grazing of Swiss cattle in risk areas such as the border areas with Austria and Germany where contact with infected cattle or wildlife cannot be excluded.
In 2023, M. bovis was detected in two cats imported from abroad. They lived in the same household in Switzerland. The host range of M. bovis is very broad and there are repeated cases of infection with M. bovis in cats, mainly through the alimentary intake of contaminated food products [6]. In addition, M. tuberculosis was detected in an African elephant in 2023. Worldwide, there are several cases of M. tuberculosis infections in elephants, which are considered to be highly susceptible. In Switzerland in 2015, cases of M. tuberculosis in Asian elephants were already reported [7].
In addition, two llamas and one cat were tested positive for M. microti in 2023. M. microti is rarely found in Switzerland, mainly in cats and camelids. Information on the number of animals tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.
At slaughterhouses, lymphatic tissue and organ material of one cattle suspicious for bovine TB were taken during meat inspection in 2023. The samples tested negative by real-time PCR and culture.
Within the framework of the LyMON monitoring program in 2023, lymphatic tissue with unspecific alterations of 89 cattle were analyzed using a graduated diagnostic scheme (pathological investigation, Ziehl-Neelsen staining, genus-specific mycobacterial real-time PCR, MTBC culture and histology). All samples were negative for bacteria of the M. tuberculosis-complex.
In addition, lymphatic tissue and rarely unspecific alterations of organs of 174 wild animals (mainly red deer) were investigated in 2023. There was no evidence of tuberculosis infections in wildlife in 2023.
As almost every year, a few cultures revealed growth of non-tuberculous mycobacteria (such as M. intermedium, M. intracellulare ssp. chimaera and M. avium), which are known to be in the majority of cases nonpathogenic for humans or animals. These non-tuberculous mycobacteria are mainly found in the environment, in soil and water.

6.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

The detection of suspect cases during meat inspection in slaughterhouses is a challenge in a country with a very low disease prevalence. The special monitoring program LyMON at the slaughterhouses continues to keep awareness at slaughterhouses high.

6.4. Additional information

[1] See previous national reports for additional information and website of the FSVO.
[2] Ghielmetti, G. et al. (2020) Mycobacterial infections in wild boars (*Sus scrofa*) from southern Switzerland: Diagnostic improvements, epidemiological situation and zoonotic potential. Transboundary and Emerging Diseases
[3] Ghielmetti, G. et al. (2021). Evaluation of Three Commercial Interferon-γ Assays in a Bovine Tuberculosis Free Population. Frontiers in Veterinary Science
[4] Ghielmetti, G. et al. (2021). *Mycobacterium microti* Infections in Free-Ranging Red Deers (Cervus elaphus). Emerging Infectious Diseases
[5] Ghielmetti, G. et al. (2021). *Mycobacterium helveticum* sp. nov., a novel slowly growing mycobacterial species associated with granulomatous lesions in adult swine. International Journal of Systematic and Evolutionary Microbiology
[6] DOI: 10.1111/tbed.13889
[7] DOI:10.1038/s41598-017-15278-9

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

7. Description of Monitoring/Surveillance/Control programmes system*: Cattle and M. bovis / M. caprae / M. tuberculosis

7.1. Monitoring/Surveillance/Control programmes system[(a)]

Switzerland is officially acknowledged as free from bovine tuberculosis since 1959.

7.2. Measures in place[(b)]

Actions to be taken in suspicious farms are ban of all animal traffic and investigation of the whole herd. In confirmed cases (herds) all diseased or suspicious cattle has to be slaughtered and the milk of them is disposed. The barn has to be disinfected.

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

Bovine tuberculosis (*M. bovis*, *M. caprae* and *M. tuberculosis*) is notifiable (TSV, Art. 3: disease to be eradicated and Art. 158 - Art. 165). Notifications of suspicious cases are mandatory.

7.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

In 2023, no cases of tuberculosis in cattle were reported to the FSVO by cantonal veterinarians. There were no further outbreaks in cattle since the last two unusual outbreaks in 2013 and 2014.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**
(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(c): Mandatory: Yes/No.
(d): Minimum five years.
(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

8. General evaluation*: *Campylobacter*

8.1. History of the disease and/or infection in the country[(a)]

Human campylobacteriosis is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Campylobacteriosis is the most commonly reported food borne infectious disease in humans.
In animals, campylobacteriosis is also notifiable (TSV, Article 5: disease to be monitored).

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

The number of notified human campylobacteriosis cases decreased from 7'551 in 2022 to 6'756 confirmed cases in 2023. Slightly more men (55%) than women (45%) were affected. In accordance with previous years, most cases were caused by *Campylobacter* (*C.) jejuni* (58% of all cases, in 33% of cases no distinction was made between *C. jejuni* and *C. coli*). In 2023, the typical summer peak occurred in the months of July and August accounting for 1'596 cases[1].
85 cases of campylobacteriosis were reported in animals to the FSVO by cantonal veterinarians in 2023. The number of reports decreased steadily from 2019 until 2023. As usual, dogs, cattle and cats were affected mainly.
Healthy broilers are often carriers of *C. jejuni* and to a lesser extend of *C. coli* and carcasses might become contaminated during slaughter. The occurrence of this pathogen in broiler farms is analysed as part of the antimicrobial resistance monitoring program. Broilers are sampled every second year (since the year 2015) by collecting pooled caecal samples at the slaughterhouse level. In the years, when broilers are not tested, pigs are tested for *C. colir* by examining caecal samples. Since 2021, also calves under one year are monitored in addition to the pigs for *C. jejuni* and *C. coli.*
In 2023, 241 caecal samples of 308 slaughter pigs (78%) were *C. coli*-positive. Thus, the detection rate has increased again compared to 2021 (66%). In 2015, the detection rate was 54% and has increased steadily since then and is presumably due to optimised sampling and transport of samples. In 2023, a total of 154 out of 306 caecal samples (52%) from calves under one year were positive for *C. jejuni*. Compared to 2021 with a detection rate of 48%, this has remained roughly constant. Moreover, another eight out of 306 caecal samples from calves tested positive for *C. coli* (2.6%).
In 2022, 266 of 800 broilers (33%) were *Campylobacter*-positive (204x *C. jejuni*, 34x *C. coli, 28x C. jejuni* and *C. coli)*. The prevalence of 33% was within the range of the previous years (28% in 2018 (95CI 25% - 32%) and 38% in 2013 (95CI 33% - 42%)). In each year, a typical summer peak can be observed.
Mainly the handling of raw poultry meat and the following cross-contamination of other foods leads to human cases of campylobacteriosis. Cattle and the contact to pets were shown to be less important as sources of human campylobacteriosis. It is assumed that the high rate of disease in young adults aged 15 to 24 years is attributable to less regard for kitchen hygiene at this age and increased travel. Above average infections in summer (July/August) could possibly be related to the higher infection rate in poultry flocks, frequent barbecue activities and travels abroad, the peak around New Year's Eve to increased consumption of meat dishes such as "Fondue Chinoise" (with resulting cross-contaminations) and travelling abroad.

8.3. Additional information

[1] Ghielmetti, G., Seth-Smith, H.M.B., Roloff, T., Cernela, N., Biggel, M., Stephan, R., Egli, A. (2023). Whole genome-based characterization of *Campylobacter jejuni* from human patients with gastroenteritis collected over an 18-year period (2003-2020). Microbial Genomics 9:000941 DOI 10.1099/mgen.0.000941
[2] Stevens, M.J.A., Stephan, R., Horlbog, J.A., Cernela, N., Nüesch-Inderbinen, M. (2024). Whole genome sequence-based characterisation of *Campylobacter* isolated from broiler carcasses over a three-year period in a big poultry slaughterhouse reveals high genetic diversity and a recurring genomic lineage of *Campylobacter jejuni*. Infection, Genetics and Evolution 119,105578. https://doi.org/10.1016/j.meegid.2024.105578

See previous national reports for additional information and website of the FSVO.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

9. Description of Monitoring/Surveillance/Control programmes system*: Fresh poultry meat, poultry meat preparations and poultry meat products and *Campylobacter*

9.1. Monitoring/Surveillance/Control programmes system[(a)]

The industry takes responsibility for the monitoring of the poultry meat production in a system of self-auditing following the HACCP (Hazard Analysis and Critical Control Points) principles. Results of the *Campylobacter* monitoring of the largest poultry slaughterhouses and poultry meat producers are available, covering more than 90% of the poultry meat production. Carcasses, fresh poultry meat, poultry meat preparations and poultry meat products are tested at different stages, such as slaughterhouses, cutting plants, and processing plants. No data of imported poultry meat are included in the analysis.

9.2. Measures in place[(b)]

The Ordinance on Hygiene (SR 817.024.1) lays down a process hygiene criterion for broiler carcasses. At the slaughterhouse level, a certain number of broiler carcasses must be tested quantitatively for *Campylobacter* after chilling. *Campylobacter* counts must thereby not exceed a certain limit too frequently. Otherwise, the slaughterhouse must implement measures (improvement of hygiene, review of process control etc.) to ensure adequate *Campylobacter* counts on the broiler carcasses.

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

None.

9.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

Within the framework of the self-auditing system of the poultry meat industry, a total of 1326 examinations including samples from broiler and turkey meat (carcasses and meat) were performed in 2023. Of them, 335 (25%) proved to be positive for *Campylobacter* spp. (2022: 27%): 137x *C. jejuni* (41%), 26x *C. coli* (8%), and 172x unspecified (51%); see also *Campylobacter* poultry meat table.
Of all 1316 broiler meat samples (carcasses and meat), 335 (25%) proved to be positive for *Campylobacter* Thereby, 288 (35%) of the 821 tested broiler carcass samples and 47 (60%) of the 495 tested broiler meat samples were positive for *Campylobacter*. Moreover, none (0%) of the 10 turkey meat samples proved to be positive for *Campylobacter*.
In order to verify the correct implementation of the process hygiene criterion for *Campylobacter* on broiler carcasses by the food business operators, the 821 samples from broiler carcasses were analyzed quantitatively for *Campylobacter* in 2023. Overall, 101 (12%) of the 821 tested samples from broiler carcasses exceeded 1'000 CFU/g. In addition, 187 (23%) of the 821 tested samples from broiler carcasses showed *Campylobacter* counts above the detection limit but counts were ≤1'000 CFU/g. Of all 288 *Campylobacter*-positive samples (below and above 1'000 CFU/g), 74 samples showed counts in the range from >detection limit to ≤100 CFU/g, 113 samples were in the range from >100 to ≤1'000 CFU/g, 90 samples were in the range from >1'000 to ≤10'000 CFU/g and 11 samples exceeded 10'000 CFU/g.
Considering the *Campylobacter* species, the *Campylobacter* counts were distributed as follows: *Campylobacter jejuni*-positive (122 samples) 30 samples in the range from >detection limit to ≤100 CFU/g, 59 samples in the range from >100 to ≤1'000 CFU/g, 29 samples in the range from >1'000 to ≤10'000 CFU/g and four samples exceeded 10'000 CFU/g; *Campylobacter coli*-positive (23 samples) - nine samples in the range from >detection limit to ≤100 CFU/g, nine samples in the range from >100 to ≤1'000 CFU/g, four samples in the range from >1'000 to ≤10'000 CFU/g and one sample exceeded 10'000 CFU/g; *Campylobacter*-positive without typing (143 samples) - 35 samples in the range from >detection limit to ≤100 CFU/g, 45 samples in the range of >100 to ≤1'000 CFU/g, 57 samples in the range of >1'000 to ≤10'000 CFU/g and six samples exceeded 10'000 CFU/g.

9.5. Additional information

The poultry industry encourages farmers to lower the *Campylobacter* burden by incentives for *Campylobacter*-free flocks at slaughter. No immunoprophylactic measures are approved.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonosis or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(c): Mandatory: Yes/No.
(d): Minimum five years.
(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

Switzerland

10. General evaluation*: *Coxiella*

10.1. History of the disease and/or infection in the country[(a)]

Coxiellosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). The number of detections of *Coxiella* (*C.*) *burnetii* in humans has been stable for the past years.

Coxiellosis in animals is notifiable (TSV, Article 5: disease to be monitored). Cumulative abortions in cattle after three months of pregnancy and every abortion in sheep, goats and pigs have to be reported to a veterinarian. If more than one animal in a holding of ruminants aborts within four months, or if an abortion occurs in a dealer's stable or during alpine pasturing, cattle, sheep and goats undergo laboratory investigation. If clinically suspected cases are confirmed by a laboratory, the cantonal veterinarian is notified.

The seroprevalence of the pathogen in cases of abortion is estimated about 16% in cattle. The seroprevalence of *C. burnetii* in small ruminants was determined in a study in 2017[(3)] by commercial ELISA from a representative sample of 100 sheep flocks and 72 goat herds. Herd-level seroprevalence was 5.0% (95% CI: 1.6-11.3) for sheep and 11.1% (95% CI: 4.9-20.7) for goats. Animal-level seroprevalence was 1.8% (95% CI: 0.8-3.4) for sheep and 3.4% (95% CI: 1.7-6) for goats.

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

In 2023, 101 human cases of coxiellosis were reported corresponding to a notification rate of 1.1 per 100'000 inhabitants. Compared to 2022, the number of cases increased (2022: 89 cases). Twenty cases were identified as part of an outbreak in a herd of goats in spring in the canton of Valais. The remaining cases occurred throughout Switzerland and spread throughout the year. Predominantly men (52%) of adult age were affected.

In 2023, 389 cases of coxiellosis, mainly in ruminants, were reported to the FSVO by cantonal veterinarians. Since 2021 the number of notifications in animals, especially in cattle (85% of all notifications), has risen significantly. This significant increase in reporting in cattle is mainly due to the introduction of more sensitive detection methods (real time PCR) since 2021.

In sheep and goats underreporting is estimated to be higher than in cattle.

Information on how many animals were tested and specific sampling context is available in the specific report available in the first part of the national report.

C. burnetii as a cause of abortions is much more often reported in cattle. However, infected cattle are less important as source of infection for humans than infected sheep and goats. This could also be seen in the outbreak in Ticino in spring 2019, where two infected goat herds were most likely the source of human infection. Especially during lambing of small ruminants, the risk of human infection is higher.

10.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

Q-Fever in humans is again notifiable since 2012. Disease awareness and knowledge how to avoid infections must be improved. Farmers need to be motivated to send abortion material to the laboratories for further investigation.

10.4. Additional information

[1] See previous national reports for additional information and website of the FSVO.

[2] Sara Vidal, Kristel Kegler, Gilbert Greub, Sebastien Aeby, Nicole Borel, Mark P Dagleish, Horst Posthaus, Vincent Perreten, Sabrina Rodriguez-Campos: Neglected zoonotic agents in cattle abortion: tackling the difficult to grow bacteria. BMC Vet Res . 2017 Dec 2;13(1):373.

[3] Magouras I, Hunninghaus J, Scherrer S, Wittenbrink MM, Hamburger A, Stärk KD, Schüpbach-Regula G.: *Coxiella burnetii* Infections in Small Ruminants and Humans in Switzerland. Transbound Emerg Dis 2017; 64(1): 204-212.

* **For each zoonotic agent**

(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country

(b): If applicable

11. General evaluation*: *Cysticercus*

11.1. History of the disease and/or infection in the country[(a)]

Cysticercosis in animals and humans is not notifiable. Cattle, small ruminants and swine are inspected at slaughter for cysticerci. According to the ordinance on hygiene during slaughter (VHyS; SR 817.190.1) all cattle older than 8 months must be checked for cysticerci by incisions into the jaw muscles (*M. masseter* and *M. pterygoideus* on both sides) and incisions into the heart.
Carcasses with few cysticerci must be frozen before they can be processed further, whereas carcasses with generalized infections of the musculature will be confiscated.

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

Taenia saginata cysticerci in cattle remain an issue of food safety (zoonotic) and economic significance. Based on routine slaughterhouse reports, the prevalence is likely underestimated in the Swiss cattle population. Data from carcasses with generalized cysticercosis have been documented in Fleko (Swiss meat inspection statistics) for many years, however without systematic molecular species identification. Since 2020, cases with non-generalized infections by few cysticerci are also documented.
In 2023, cases of generalized cysticercosis were detected in 8 cattle (*T. saginata*) and 2 sheep (species not identified). The year before, there were 19 and 3 cases in cattle and sheep, respectively. Weak or non-generalized infections (*Taenia* spp., without species identification) were detected in 836 cattle and 25 sheep in 2023 (2022: 845 cattle and 15 sheep).

11.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

In a cross-sectional study [1] 101 ready-to-eat salads and 118 herb samples were collected during 2023 on retail level. Swiss products as well as imported products were integrated. Moreover, production labels (conventional production versus bio products) were considered during sample collection.
In total, 13 of the 118 tested herb samples (11%) showed a presumptive positive result in the PCR screenings for taeniids and/or Toxocara sp., of which eleven were confirmed through sequencing. The following helminth species were identified: Taenia hydatigena (n=7), Taenia serialis (n=1), Taenia multiceps (n=1), Echinococcus granulosus (n=1) and Toxocara canis (n=1). One herb sample (coriander, Thailand) was two-fold contaminated with T. hydatigena and T. canis. Of the 101 tested RTE-salad samples, a total of 14 (13.9%) showed a presumptive positive result in the PCR screenings for taeniids or Toxocara sp. of which six were confirmed: Echinococcus multilocularis (n=1), Echinococcus granulosus (n=2), Mesocestoides litteratus (n=1) and Toxocara canis (n=2).

11.4. Additional information

[1] Tresch, S., Stephan, R., Schnyder, M. (2024). Occurrence of foodborne parasites in ready-to-eat salads and herbs collected on retail level in Switzerland, submitted.
See previous national reports for additional information and website of the FSVO.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

12. General evaluation*: *Echinococcus*

12.1. History of the disease and/or infection in the country[(a)]

Echinococcus granulosus sensu lato, the causative agent of cystic Echinococcosis (CE) has been nearly extinct in Switzerland. Sporadically, imported cases are diagnosed in humans or animals (dogs or cattle and sheep).
Alveolar echinococcosis (AE) is caused by the fox tapeworm *Echinococcus multilocularis.* Infections in intermediate or accidental hosts may lead to serious disease. The parasite is endemic in Switzerland and few cases in humans and domestic animals are continuously identified.
Echinococcosis is notifiable in animals (TSV, Article 5: disease to be monitored) but not in humans.

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

The hospitalization rate of human AE-cases (patients who were hospitalized for the first time due to AE) is stable since 2015 (0.58 cases per 100'000 inhabitants in 2022 (hospital-based data)). However, the hospitalization rate should not be considered equal to the number of new infections. Albeit the risk of infection in human cases of AE remains low.
In 2023, 19 cases in animals were reported to the FSVO by cantonal veterinarians (in 14 dogs,3 zoo animals, 1 cat, 1 fox). The reported cases were within the range of previous year, but there are increasing numbers since 2020 (year 2020 and 2021: 10 reported cases each year). No systematic monitoring of wild animals is established and therefore, the cases reported do not represent the real endemic situation. The prevalence of *E. multilocularis* in foxes, the main reservoir, is estimated to lie between 20% and 70%, with lower prevalence in the alpine regions and higher prevalence in the Swiss Plateau and Jura.
The Institute of Parasitology of the University of Zurich has examined 588 hunted foxes from the Zurich region in a small surveillance study conducted between 2016 and 2023. All in all, 44% were positive for *E. multilocularis* (range: 25% – 61%). In 2012 and 2013, 157 of 300 hunted foxes from Eastern Switzerland (54%) were positive for *E. multilocularis.*
Fox tapeworm eggs can be found in fresh foodstuff (outdoor cultivation) and several studies report on microscopic detection of taeniid eggs in vegetables (Alvarez Rojas et al., 2018) and in fresh produce (lettuce) (Guggisberg et al., 2020). In a field study in 2020, DNA of *E. multilocularis* was detected in 2 of 157 (1.2%) lettuce samples.
A research project on the prevalence of *E. multilocularis* in slaughter pigs and associated risk factors was conducted between 2016 and 2018. In total, 456 pig livers with lesions suggestive of *E. multilocularis* infection were submitted of which 200 livers were confirmed as *E. multilocularis*-positive. Related to the total number of pigs slaughtered during the study period the prevalence was below 0.1%. No geographical clusters were observed. Livers are destroyed at slaughterhouse as they are not fit for human consumption. Pigs are - like humans - accidental hosts for *E. multilocularis*. Thus, infected pigs are not a source of infection for humans. Host densities (red foxes and rodent species) and predation rates are key drivers for the spread of parasite eggs and of major importance for the infection risk of intermediate or accidental hosts.

12.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

Owners of dogs that hunt and eat mice are encouraged to deworm their dogs monthly. The public is advised not to feed or tame foxes but to keep them at a distance. The monthly distribution of anthelmintic baits (Praziquantel) for foxes proved to be effective, but no control programs are currently implemented.
In a cross-sectional study [4] 101 ready-to-eat salads and 118 herb samples were collected during 2023 on retail level. Swiss products as well as imported products were integrated. Moreover, production labels (conventional production versus bio products) were considered during sample collection.
In total, 13 of the 118 tested herb samples (11%) showed a presumptive positive result in the PCR screenings for taeniids and/or Toxocara sp., of which eleven were confirmed through sequencing. The following helminth species were identified: Taenia hydatigena (n=7), Taenia serialis (n=1), Taenia multiceps (n=1), Echinococcus granulosus (n=1) and Toxocara canis (n=1). One herb sample (coriander, Thailand) was two-fold contaminated with T. hydatigena and T. canis. Of the 101 tested RTE-salad samples, a total of 14 (13.9%) showed a presumptive positive result in the PCR screenings for taeniids or Toxocara sp. of which six were confirmed: Echinococcus multilocularis (n=1), Echinococcus granulosus (n=2), Mesocestoides litteratus (n=1) and Toxocara canis (n=2).

12.4. Additional information

See previous national reports for additional information and website of the FSVO.

[1] Alvarez Rojas, C.A. C, Mathis A, Deplazes P 2018. Assessing the contamination of food and the environment with *Taenia* and *Echinococcus* eggs and their zoonotic transmission. Current Clinical Microbiology Reports https://doi.org/10.1007/s40588-018-0091-0

[2] Information on fox tapeworm: www.paras.uzh.ch/infos, Expert group ESCCP_CH and guidelines for deworming of dogs and cats: http://www.esccap.ch

[3] Guggisberg, A., R., Alvarez Rojas, C., A., Kronenberg, P., A., Miranda, N., Deplazes, P.: A sensitive, one-way sequential sieving method to isolate helminths' eggs and protozoal oocysts from lettuce for genetic identification. Pathogens 9, 0624 (2020):

In 2020, a project developed and validated a simple and practical method for the simultaneous detection of parasite stages from fresh produce (lettuce) for human consumption by a one-way isolation test kit followed by genetic identification (PCR, sequencing). The detection limits in the recovery experiments were 4 *Toxocara* eggs, 2 *E. multilocularis* eggs and 18 *T. gondii* oocysts in 300 g of lettuce. In a field study, helminth DNA was detected in 14 of 157 lettuce samples including *Hydatigera taeniaeformis* (4 samples), *T. polyacantha* (3), *T. martis* (1), *E. multilocularis* (2, 1.2%) and *Toxocara cati* (4). *Toxoplasma gondii* was detected in 6 of 100 samples. The developed diagnostic strategy is highly sensitive for the isolation and genetic characterization of a broad range of parasite stages from lettuce.

[4] Tresch, S., Stephan, R., Schnyder, M. (2024). Occurrence of foodborne parasites in ready-to-eat salads and herbs collected on retail level in Switzerland, submitted.

* **For each zoonotic agent**

(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country

(b): If applicable

13. General evaluation*: *Francisella*

13.1. History of the disease and/or infection in the country[(a)]

Tularemia in humans is a notifiable disease (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Positive test results have to be declared to the Federal Office of Public health (FOPH) and the cantonal physicians. Physicians have to fill in a form concerning information on manifestation and exposure and send it to the cantonal physician who then forwards this form to the Federal Office of Public Health. Tularemia is also notifiable in animals (TSV, Article 5: disease to be monitored).

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

109 cases of tularemia were registered at the Federal Office of Public Health in 2023. The notification rate was 1.2 cases per 100'000 inhabitants. Compared to the previous year, the number of cases slightly decreased (119 cases in 2022). In 59 cases men and in 50 cases women, aged between 0 and 80 years, were affected. Tick bite was the most frequent probable source of infection. Other reported sources of infection for humans are contact to wild animals (mainly mice and hares), bites of insects as well as the inhalation of dust/aerosol and contaminated water or food. Those most at risk are mainly gamekeepers, hunters, people who work in agriculture or forestry, wild animal veterinary practitioners and laboratory staff.

Tularemia affects mainly wild animals, especially hares and rodents but also zoo animals. In 2023, three cases in hares were reported to the FSVO by cantonal veterinarians. The number of reported cases has been decreased continuously since 2018. The increase in reported numbers in 2018 was due to much more tested hares in 2018. Since than the number of tested hares decreased again. Laboratory data show, that the positivity rate was not higher compared with other years (38% (2018), 46% (2019, 2020), 40% (2021)). The positivity rate was 50% in 2022 and 43**%** in 2023.

In 2021 and 2019 *Francisella* (*F.*) *tularensis* subsp. *holarctica* was detected for the first time in Switzerland in cats (see case report 2019). This were very rare events. Published cases of *F. tularensis* in cats so far were related to North America (Baldwin et al., 1991; Woods et al., 1998; Farlow et al., 2001; DeBey et al., 2002; Staples et al., 2006). *F. tularensis* subsp. *holarctica* seems to be of minor importance in North America as mainly *F. tularensis* subsp. *tularensis* were found.

In a study from 2018 the prevalence of *F. tularensis* in ticks in Switzerland was estimated to be around 0.02%. In addition, from 2018 to 2020 a total of about 1250 tick samples have been collected in the framework of a citizen science project involving the app "tick prevention". Every citizen living in Switzerland and using the app could send in ticks that they had removed from themselves to the national reference center (for study purposes, not for individual testing for pathogens). Of 1251 ticks collected and tested, only one tested positive for F. tularensis.

13.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

Tular-CH-Working-Group is a "One Health initiative". Tularemia on the rise in Switzerland? A one health approach is needed! https://pubmed.ncbi.nlm.nih.gov/38480644/

13.4. Additional information

[1] See previous national reports for additional information and website of the FSVO or website of the FOPH.

[2] Wittwer et al, 2018: Population Genomics of *Francisella tularensis subsp. holarctica* and its implication on the eco-epidemiology of Tularemia in Switzerland; Frontiers in Cellular and Infection Microbiology, Volume 8, Article 89.

[3] Publication in the FOPH Bulletin 18/18 from 30.04.2018.

[4] Sonja Kittl, et al.: First European report of *Francisella tularensis subsp. holarctica* isolation from a domestic cat. Vet Res . 2020 Aug 31;51(1):109.

[5] Peterhans, S., Ghielmetti, G., Botta, C., Friedel, U., Hilbe, M., Schneeberger, M., Stephan, R. (2018). Case of the month: Tularemia in a European brown hare (*Lepus europaeus*): a disease with an increasing veterinary public health relevance. Schweizer Archiv für Tierheilkunde 160, 673–675.

* **For each zoonotic agent**

(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country

(b): If applicable

14. General evaluation*: *Listeria*

14.1. History of the disease and/or infection in the country[(a)]

Listeriosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). People mainly affected are adults aged over 60.
Listeriosis in animals is notifiable (TSV, Article 5: disease to be monitored).

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

In 2023, 74 human cases were reported (notification rate: 0.8 per 100'000 inhabitants). Thus, the number of notifications was higher compared to previous years. This was due to an outbreak with 29 cases: six cases in 2022 and 23 cases in 2023. The source of infection was identified and is currently being eliminated. Persons over 65 years of age remained the most affected age group and more women (53%) than men (47%) were reported.
In 2023, 13 cases of animal listeriosis were reported to the FSVO by cantonal veterinarians. The reported cases were within the range of previous years. Affected are mainly ruminants: cattle (52%), sheep (18%) and goats (17 %). Information on how many animals were tested and specific sampling context is available in the specific report available in the first part of the national report.
Listeria monocytogenes is repeatedly leading to disease in humans. Even if the number of cases is relatively small, the high lethality makes it very significant. Monitoring the occurrence of *Listeria* spp. at different stages in the food chain is extremely important to prevent infections due to contaminated food. Dairy products such as cheeses made from unpasteurized milk or soft cheeses that are eaten with the rind are potential sources of infection. With regard to *Listeria* spp. in the dairy industry, the situation has remained on a constantly low level for many years. In animals, the reported listeriosis cases have remained stable at a low level over the last years.

14.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

None.

14.4. Additional information

See previous national reports for additional information and website of the FSVO.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

15. Description of Monitoring/Surveillance/Control programmes system*: *dairy products and Listeria monocytogenes*

15.1. Monitoring/Surveillance/Control programmes system[(a)]

Agroscope Food Microbial Systems (MSL) is running a *Listeria* monitoring program (LMP) for early detection of *Listeria* spp. in production facilities. Products are tested for *Listeria* spp. as part of the quality assurance programs.

15.2. Measures in place[(b)]

The concerned food has to be confiscated and destroyed. Depending on the situation, the product is recalled and a public warning is submitted. The implementation of a hygiene concept in order to control the safety of the products is in the responsibility of the producers. All larger cheese producers have a certified quality and hygiene management system in place.

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

None.

15.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

In the framework of the *Listeria* Monitoring Program (LMP), 1'165 samples (environmental, milk and cheese samples) were tested for the presence of *Listeria* spp. In 2023, *Listeria monocytogenes* were detected three times (0.26%). Other species of *Listeria* were found in 21 samples (1.8%).
In a master thesis recently completed at the Institute for Food Safety and Hygiene of the University of Zurich (sample survey 2021), no *Listeria monocytogenes* were detected in 100 raw milk alpine cheeses from different regions of Switzerland.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

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

16. General evaluation*: *Salmonella*

16.1. History of the disease and/or infection in the country[(a)]

Salmonellosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases).
Salmonellosis in animals is notifiable (TSV, Article 4: disease to be controlled).

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

In 2023, 1'823 human cases were reported representing a notification rate of 21 cases per 100'000 inhabitants (2022: 1'837 cases). As in previous years, the most affected age group was children under 5 years. The typical seasonal increase of notifications during summer and autumn was also observed in 2023. The most frequently reported serovars remained *S.* Enteritidis (37%), *S.* Typhimurium (15%) and monophasic *S.* Typhimurium (1,4,[5],12,i:-) (11%).
The longstanding *S.* Enteritidis control program showed its effect in the decline of human cases in the years around 2000. However, salmonellosis is still the second most frequent zoonosis in Switzerland and showed an increasing trend in human cases since 2015.
Stepping up and expanding the national control program might be needed in order to further reduce human salmonellosis cases.

16.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

Control measures were implemented according to Commission Regulations (EC): No. 200/2010 (breeding flocks), No. 517/2011 (laying hen flocks), No. 200/2012 (broilers) and No. 1190/2012 (turkeys).
The Hygiene Ordinance lays down limits for *Salmonella* in various foods. If these limits are exceeded, the cantonal laboratories are required to report this to the FSVO. The foods affected are confiscated and destroyed. Depending on the situation, the products may be recalled, and a warning is issued to the population. All larger manufacturers have a certified quality and hygiene management system in place.

16.4. Additional information

Biggel, M., Horlbog, J., Nüesch-Inderbinen, M., Chattaway, M.A., Stephan, R. (2022). Epidemiological links and antimicrobial resistance of clinical ***Salmonella enterica*** ST198 isolates: a nationwide microbial population genomic study in Switzerland. Microbial Genomics 8(10). doi: 10.1099/mgen.0.000877.
See previous national reports for additional information and website of the FSVO.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

17. Description of Monitoring/Surveillance/Control programmes system*: All animals and *Salmonella* spp.

17.1. Monitoring/Surveillance/Control programmes system[(a)]

Salmonellosis is notifiable in all animals (passive surveillance). Animal keepers, livestock inspectors, AI technicians, animal health advisory services, meat inspectors, slaughterhouse personnel, police and customs officers have to report any suspected case of salmonellosis in animals to a veterinarian. If *Salmonella* are confirmed by a diagnostic laboratory, this must be reported to the cantonal veterinarian. Cases in cows, goats or dairy sheep must be reported to the cantonal health and food safety authorities.

17.2. Measures in place[(b)]

If biungulates are affected, the sick animals must be isolated and the whole herd and the environment must be tested. Healthy animals from this herd may be slaughtered with a special official permit and subject to appropriate precautions at the slaughterhouse. Milk from animals that are excreting *Salmonella* must not be used for human consumption and may only be used as animal feed after pasteurization or boiling. If the disease occurs in animals other than biungulates, appropriate action must likewise be taken to prevent any risk to humans.

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

Salmonellosis in animals is notifiable (TSV, Art. 4: diseases to be controlled and Article 222-227).

17.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

Salmonellosis in all animals is regularly registered.
In 2023, 123 salmonellosis cases in animals were reported to the FSVO by cantonal veterinarians. In the previous 10 years, reported cases ranged between 63 and 127 per year. Mainly affected were dogs (24%) cows (24%), reptiles (21%) and cats (14%).
Information on how many animals were tested and specific sampling context is available in the specific report available in the first part of the national report.

17.5. Additional information

[1] See previous national reports for additional information and website of the FSVO.
[2] Vogler, B.R., et al. (2021). Low occurrence of *Salmonella* spp. in wild birds from a Swiss rehabilitation centre. Veterinary Record open.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

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

18. Description of Monitoring/Surveillance/Control programmes system*: Poultry and *Salmonella* spp.

18.1. Monitoring/Surveillance/Control programmes system[(a)]

There is a control program in place based on Commission Regulation (EC) No. 200/2010 regarding breeding flocks with more than 250 places, Commission Regulation (EC) No. 517/2011 regarding laying hen flocks with more than 1'000 places, Commission Regulation (EC) No. 200/2012 regarding broilers with more than 333 m^2 floor space and Commission Regulation (EC) No. 1190/2012 regarding fattening turkeys with more than 200 m^2 floor-space. Subject to state control measures are *S.* Enteritidis, *S.* Typhimurium and monophasic *S.* Typhimurium (1,4,[5],12,i:-); for breeding flocks additionally *S.* Hadar, *S.* Infantis and *S.* Virchow.

18.2. Measures in place[(b)]

Control measures are taken according to the Swiss ordinance of epizootics (TSV, Article 255-261). If *Salmonella* serotypes subject to control measures are detected in the environment, there is a suspicion of *Salmonella* infection. In the event of a suspected infection, the official veterinarian samples 20 killed animals or fallen stock per flock and submits them to bacteriological testing for *Salmonella*. If *S.* Enteritidis, *S.* Typhimurium or monophasic *S.* Typhimurium (1,4,[5],12,i:-) are detected in the animal samples, or in the case of breeding flocks *S.* Hadar, *S.* Infantis and/or *S.* Virchow, a case of *Salmonella* infection is reported.
In this case, animal movements from this holding are prohibited (TSV, Article 69) in order to prevent spread of disease. The flocks may not be changed either by moving animals to other flocks or by introducing animals from other flocks.
In breeding flocks, the animals are culled and the eggs are no longer allowed to be used for breeding purposes. If laying hens, broilers or fattening turkeys are affected, the flocks can be culled or slaughtered. Fresh meat and eggs either have to be disposed of or subjected to treatment in order to destroy the *Salmonella* before being marketed as food.
The animal movement ban is lifted when all animals have been culled or slaughtered and the premises were cleaned and disinfected. Freedom of the premises from *Salmonella* should be proven by means of bacteriological testing. Vaccination is prohibited.

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

Salmonella infection in poultry is notifiable (TSV, Art. 4 and Article 255-261).

18.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

In 2023, 11 cases were reported in the framework of the control program in laying hens (eight *S.* Enteritidis, three *S.* Typhimurium) and one case in broilers and fattening turkeys, respectively (both *S.* Enteritidis).
Further 17 suspect cases (positive environmental samples not confirmed in animal samples) were detected: 12 in laying hens >1'000 places (six *S.* Enteritidis, four *S.* Typhimurium, two monophasic *S.* Typhimurium), 2 in broilers > 333m^2 floor space (*S.* Enteritidis), one in turkeys (*S.* Enteritidis) and one, respectively, in breeding chicken and chicken unspecified (both monophasic *S.* Typhimurium). In addition, several serovars not covered in the control program were detected in environmental samples. Beyond the control program, one small flock of laying hens was tested positive (*S.* Typhimurium). Furthermore, there were seven suspect cases: six in small laying hen flocks (three *S.* Typhimurium, three *S.* Enteritidis), and two in broilers (*S.* Enteritidis).
The results of the control program show that the *Salmonella* prevalence in Switzerland is low. The target of max. 1% *Salmonella*-positive flocks regarding the controlled serovars in broilers, turkeys and breeding flocks as well as max. 2 % in laying hens could be reached in 2023 according to Swiss law, as every year so far. Most cases occurred in laying hens. Switzerland wants to maintain the current situation by applying the aforementioned control measures.

18.5. Additional information

[1] See previous national reports for additional information and website of the FSVO.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method,

diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(c): Mandatory: Yes/No.
(d): Minimum five years.
(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

19. Description of Monitoring/Surveillance/Control programmes system*: Poultry meat and *Salmonella*

19.1. Monitoring/Surveillance/Control programmes system[(a)]

The industry takes responsibility for the monitoring of the poultry meat production in a system of self-auditing following the HACCP principles. In addition, the Ordinance on Hygiene (SR 817.024.1) lays down limits for *Salmonella* in various foods (food safety criteria and process hygiene criteria). Results of the *Salmonella* monitoring of the largest poultry slaughterhouses and poultry meat producers are available, covering more than 90% of the poultry meat production. Carcasses, fresh poultry meat, poultry meat preparations and poultry meat products are tested at different stages such as slaughterhouses, cutting plants and processing plants. No data of imported poultry meat are included in the analysis.

19.2. Measures in place[(b)]

If the limits of the Ordinance on Hygiene (food safety criteria) are exceeded, the cantonal laboratories are required to report this to the FSVO. The foods affected are confiscated and destroyed. Depending on the situation, the products may be recalled and a warning is issued to the population.

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

None.

19.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

Within the framework of the self-auditing system of the poultry meat industry, a total of 2'292 examinations including carcasses and meat samples from broilers (2'128) and turkeys (164) were performed in 2023. Of all samples, 8 (0.3%) proved to be positive for *Salmonella* spp. (2022: 0.3%). All positive samples were *S.* Enteritidis and were found in broiler: fresh broiler meat with skin (six; processing plant), broiler carcasses (one; slaughterhouse) and skinned fresh broiler meat (one; processing plant). None of the 164 turkey samples (carcasses and meat) proved to be positive for *Salmonella*.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(c): Mandatory: Yes/No.
(d): Minimum five years.
(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

20. General evaluation*: *Rabies virus*

20.1. History of the disease and/or infection in the country[(a)]

Rabies in humans is a notifiable disease (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases).
Rabies in animals is a disease to be eradicated (TSV, Art. 3 and Art. 142-149). Government action is taken to control the disease. An animal is rabies diseased if the analytical method (see additional information) gives a positive result. Anyone who sees a wild animal or stray pet that behaves in a way that appears suspiciously like rabies is required to report this to the police, hunting authorities or a veterinarian. Furthermore, animal keepers must report pets that behave in a way that is suspiciously like rabies to a veterinarian.

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

According to the definitions of the WOAH and WHO (no cases for at least two years) the territory of Switzerland is considered to be free of rabies. In 2023, no cases of rabies were registered in Switzerland in terrestrial animals and in humans. The last imported human rabies case in Switzerland occurred in 2012. Travelling to countries with rabies can pose a threat to people, especially if they are unaware of this risk. Human infections of tourists (who usually are not vaccinated against rabies) in rabies risk countries were reported in the past.
In 2023, a bat (*Myotis daubentonii*) tested positive for European Bat Lyssavirus 2 (EBLV-2) by the national reference laboratory (Swiss Rabies Center). Bat rabies occurs rarely in Switzerland: This is the sixth detected case of bat rabies in Switzerland. Previously, 4 cases of EBLV-2 (1992, 1993, 2002 and 2022) and one case of EBLV-1 (2017) have been detected.
In 2023, 1622 human sera were tested for neutralizing antibodies by rapid fluorescent focus inhibition test (RFFIT) at the Swiss Rabies Center. 656 times (40%) antibody titers were controlled after pre-expositional immunization and 827 times (51%) after post exposure prophylaxis (PEP). In 139 cases, the reason for the investigation was not indicated. The number of analyses continues to rise steadily; in 2023, the number of samples analyzed exceeded that of the previous year (+14%) and surpassed pre-coronavirus pandemic levels.
Vaccination of dogs is recommended in Switzerland, but not mandatory, if the dog does not travel abroad. (Re-)Import conditions for cats, dogs and ferrets are implemented according to the EU regulation 998/2003/EC.
2412 samples of dogs (1998 sera) and cats (414 sera) were tested in the context of travelling procedures in order to detect the level of neutralizing antibodies.
Regularly, dogs and cats are imported illegally from rabies risk countries into Switzerland. In 2023, 17 illegally imported animals (16 dogs and 6 cats) were examined, none of them tested positive for rabies. In total, 61 animals were tested for rabies at the Swiss Rabies Center in 2023. The samples originated mainly from bats (38%), dogs (26%), cats (18%) and foxes (8%). All samples but one (bat case, see above) were negative.
Illegally imported animals pose a non-negligible risk for pets and their owners in the EU and Switzerland and lead to time-consuming investigations, euthanisation of contact animals, post exposure prophylaxis (PEP) and prophylactic vaccinations.
Although bat rabies is very rare in Switzerland, the current case shows that there is a low risk of contracting rabies through contact with bats.

20.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

The situation in neighboring countries and the EU is closely monitored. In addition, close collaboration with neighboring countries is important especially with regards to control measures in wild animals. People are instructed to be cautious in the handling of diseased and abnormally behaving wild animals. Animals with suspect symptoms originating from countries with urban rabies are tested for rabies.

20.4. Additional information

See previous national reports for additional information and website of the FSVO.
[1] Diagnostic/analytical methods used: All tests concerning rabies are carried out in the reference laboratory, The Swiss Rabies Centre (admin.ch). It is authorized by the EU for rabies testing, see http://ec.europa.eu/food/animal/liveanimals/pets/approval_en.htm. For rabies virus detection immunofluorescence (FAT) and virus isolation using murine neuroblastoma cell culture (RTCIT) is used. The rabies antibody detection is carried out using the rapid fluorescent focus inhibition test (RFFIT) as described in the WOAH manual, see https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/3.01.18_RABIES.pdf
[2] The Swiss Rabies Centre (admin.ch)
[3] Queries | Rabies - Bulletin - Europe (who-rabies-bulletin.org)
[4] Nouveau schéma de vaccination contre la rage pour les voyageurs 2018- Forum Médical Suisse (medicalforum.ch)

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

21. General evaluation*: *Toxoplasma*

21.1. History of the disease and/or infection in the country[(a)]

Toxoplasmosis in humans is not notifiable. Thus, no data on the frequency of human toxoplasmosis are available. Some sporadic human cases have however been reported.
In animals, toxoplasmosis is notifiable (TSV, Article 5: disease to be monitored and Article 291). Veterinarians and diagnostic laboratories must report any suspected case of toxoplasmosis to the cantonal veterinarian, who may issue an order for the suspected case to be investigated.

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

In 2023, 8 cases in animals (6 in cats, 1 sheep, 1 hare) were reported to the FSVO by cantonal veterinarians. In these cases, the parasite was confirmed by molecular methods. Only serologic evidence of infection was not reported. In the past ten years never more than 16 cases per year were recorded. Affected animals were mainly cats (37%), sheep (12%) and goats (9%). In non-immune sheep and goats (first-time infection) *Toxoplasma gondii* is regarded as a major cause of abortion and loss of lambs.
Information on how many animals were tested and specific sampling context is available in the specific report available in the first part of the national report. In addition, each year, over 1000 routine coprology of cats are carried out.
While infections with *Toxoplasma gondii* are widespread in some meat-producing animals such as small ruminants and South American camelids, in which high seroprevalences (50-80%) were observed, low seroprevalences were observed in pigs under conventional management systems (1-6%) during the last years in Switzerland.
Cats are the main contaminators of the environment. Caution is generally called for when faced with cat faeces.
A project in 2020 developed and validated a simple and practical method for the simultaneous detection of parasite stages from fresh produce (lettuce) for human consumption. *Toxoplasma gondii* was detected in 6 of 100 samples (6%), see also additional information below.
Humans become infected by the oral route, through the uptake of infectious oocysts from the environment (i.e. vegetables / lettuce contaminated with oocysts) or by means of tissue cysts from the consumption of raw or undercooked meat from infected animals.
Pregnant women are informed about the recommendations from the FOPH to disclaim on raw or insufficient cooked meat and that caution is generally called for when faced with cat feces (and potentially contaminated surroundings).

21.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

None.

21.4. Additional information

[1] See previous national reports for additional information and website of the FSVO.
[2] Guggisberg, A., et al.: A sensitive, one-way sequential sieving method to isolate helminths' eggs and protozoal oocysts from lettuce for genetic identification. Pathogens 9, 0624 (2020): In 2020 a project developed and validated a simple and practical method for the simultaneous detection of parasite stages from fresh produce (lettuce) for human consumption by a one-way isolation test kit followed by genetic identification (PCR, sequencing). The detection limits in the recovery experiments were 4 *Toxocara* eggs, 2 *Echinococcus multilocularis* eggs and 18 *T. gondii* oocysts. In a field study, helminth DNA was detected in 14 of 157 lettuce samples including *Hydatigera taeniaeformis* (4 samples), *Taenia polyacantha* (3), *Taenia martis* (1), *E. multilocularis* (2, 1.2%) and *Toxocara cati* (4). *Toxoplasma gondii* was detected in 6 of 100 samples. The developed diagnostic strategy is highly sensitive for the isolation and genetic characterization of a broad range of parasite stages from lettuce.
[3] Basso W. et al., *Toxoplasma gondii* and *Neospora caninum* infections in sheep and goats in Switzerland: Seroprevalence and occurrence in aborted foetuses. Food Waterborne Parasitol. 2022 Aug 17;28:e00176. The observed seroprevalences for *T. gondii* in sheep and goats were 66.3% and 50.5% at the animal level, and 90.9% and 81.1% at the farm level, respectively. Older small ruminants, and sheep (vs. goats) had a higher risk of being seropositive to *T. gondii*. Alpine grazing in summer was identified as a protective factor for seropositivity to *T. gondii* in both animal species. In addition, *T. gondii* DNA was detected in 6.1% (n = 82), and in 6.8% (n = 73) of the tested ovine and caprine foetuses, respectively. These results suggest the involvement of these parasites in abortions and reveal a high prevalence of *T. gondii* in small ruminants in Switzerland. They also suggest that consumption of undercooked meat from *T. gondii* infected sheep and goats may represent a risk for public health.
[4] Basso W. et al.: *Toxoplasma gondii* and *Neospora caninum* infections in South American camelids in Switzerland and assessment of serological tests for diagnosis. Parasites and Vectors. 2020;13(1):256. This study estimated the seroprevalence of *T. gondii* infections in South American camelids in Switzerland, optimized serological tests for these animal species and identified risk factors, which may favour infection. Seroprevalences of 82.3% and 84.8% were estimated for alpacas and llamas respectively, and 99.2% of the sampled farms had at least one seropositive animal. The variables "older age" and "female sex" were identified as risk factors for seropositivity and "absence of cats in the farm during the last two years" as a protective factor. This nationwide cross-sectional study demonstrated for the first time the presence of antibodies against *T. gondii* in the Swiss SAC population, highlighting a high seroprevalence for *T. gondii*, and suggested that SAC meat might represent an additional infection source for humans.
[5] Lucien Kelbert et al.: Seroprevalence of *Toxoplasma gondii*, hepatitis E virus and *Salmonella* antibodies in meat juice samples from pigs at slaughter in Switzerland. Journal of Food Protection, In a study in 2020, diaphragm muscles of Swiss fattening pigs were collected in three Swiss abattoirs from a total of 188 farms. Two randomly chosen pig carcasses per farm were selected. On the basis of the slaughter data, the production system and the canton of origin were noted, comparing indoor (n=120) and free-range farming (n=68), and regional allocation. The meat juice of these samples was analyzed for pathogen-specific antibodies using commercial enzyme-linked immunosorbent assay (ELISA) kits. The seroprevalence for *Toxoplasma gondii* was 1.3%.
[6] Bassi, A.M.G., et al. (2021). Seroprevalence of *Toxoplasma gondii* and *Salmonella* in hunted wild boars from two different regions in Switzerland. Animals.
[7] Kauter J, et al., Detection of Toxoplasma gondii-specific antibodies in pigs using an oral fluid-based commercial ELISA: Advantages and limitations. Int J Parasitol. 2022 Dec 29:S0020-7519(22)00183-7. This study investigated the possibility of detecting *T. gondii* infections in pigs by detection of specific antibodies in oral fluid using an adapted commercial indirect ELISA kit (OF-ELISA). In experimentally infected animals, positive results were observed from 1.5 weeks post inoculation (pi) until the end of the experimental setup (8 to 30 weeks pi); however, values below the estimated cut-off were occasionally observed in some animals despite constant seropositivity. In group-housed fatteners, antibodies against *T. gondii* could be reliably detected by OF-ELISA in groups in which at least 25% of the animals were seropositive. This test may represent an interesting non-invasive screening tool for detecting pig groups with a high exposure to *T. gondii* at the farm level. Nevertheless, the OF-ELISA may need further adjustments to consistently detect individual infected pigs, probably due to variations in OF antibody concentration over time.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

22. General evaluation*: *Trichinella*

22.1. History of the disease and/or infection in the country[(a)]

Trichinellosis is notifiable in humans (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases) and in animals (TSV SR 916.401, Article 5: disease to be monitored).
The testing of slaughter pigs (as well as wild boars and horses) for trichinellosis is mandatory (Commission Regulation (EC) No. 2075/2005). Exceptions can be made for slaughterhouses of small capacity, which do not export to the EU. Pig meat not being tested for trichinellosis and originating from these small slaughterhouses is labeled with a special stamp and cannot be exported.

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

In 2023, 2 human cases of Trichinellosis were reported. The FOPH receives very few reports of human trichinellosis, there were never more than 4 human cases notified per year. Usually, the *Trichinella* species is not known as cases are only tested by serology. Thus, trichinellosis in humans is very rare in Switzerland and often associated with infections acquired abroad.
In 2023, 2'310'961 slaughter pigs were tested for *Trichinella*. All results were negative. For many decades, *Trichinella* infections have not been detected in domestic pigs. Due to the extensive testing over the last years with only negative results, Swiss slaughter pigs are projected to be free of *Trichinella.* In addition, 764 horses and 8'601 wild boars were also tested for trichinellosis in 2023. All results from horses and wild boars were negative. In 2021 it was the first time since many years that one wild boar tested positive for *Trichinella* (*Trichinella britovi*). Until then, only antibodies against *Trichinella* were found in a few wild boars.
However, *Trichinella* is detected in a few wild animals other than wild boars each year, with lynx (62%) and wolves (34%) being the most affected species. In 2023, 6 cases of *Trichinella* infections (*T. britovi*) were reported in wild animals to the FSVO by the cantonal veterinarians (4 in wolves and 2 in lynx). The most cases in carnivorous wild animals were reported in 2022 (7 wolves and 6 lynx). *Trichinella britovi* circulates in the wild animal population since decades. To date, the nematodes involved in the wild animal population were always *Trichinella britovi*, with one exception. In 2020, *Trichinella spiralis* was detected for the first time in a wild animal (a lynx) in Switzerland. The detection of *Trichinella spiralis* is estimated to be a rare event.
Thus, infections in wild boars in Switzerland cannot be completely excluded. Therefore, meat especially from wild boars should not be consumed raw. Although the risk of transmission from wild animals to domestic pigs is negligible, the surveillance of trichinellosis in wild animals is crucial.

22.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

None.

22.4. Additional information

See previous national reports for additional information and website of the FSVO.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

23. Description of Monitoring/Surveillance/Control programmes system*: *Horses and Trichinella*

23.1. Monitoring/Surveillance/Control programmes system[(a)]

The investigation of horses is mandatory (Swiss ordinance of slaughter and meat control, VSFK SR 817.190, Article 31). Slaughtered horses are tested during or immediately after the slaughter process. A piece of tongue is used to detect *Trichinella* spp. larvae using the artificial digestion method according to Commission Regulation (EC) No. 2075/2005.

23.2. Measures in place[(b)]

A positive tested animal would be traced back and the contaminated carcass would be disposed.

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

Trichinellosis in animals is notifiable (TSV, Article 5).

23.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

In 2023, 764 horses were tested for *Trichinella*. All results were negative. There are no observations that would challenge the freedom of Swiss horses from trichinellosis.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

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

24. Description of Monitoring/Surveillance/Control programmes system*: Pigs and *Trichinella*

24.1. Monitoring/Surveillance/Control programmes system[(a)]

The investigation of slaughter pigs and wild boars is mandatory (Swiss ordinance of slaughter and meat control, VSFK SR 817.190, Article 31). All pigs slaughtered in slaughterhouses that are approved to export to the EU are tested for *Trichinella*. Exceptions are made for small slaughterhouses of the national market, which do not export to the EU.
Census sampling, with the exception of pigs slaughtered in small slaughterhouses and only produced for the local market, is done during or immediately after the slaughter process. A piece of pillar of the diaphragm is taken at slaughter in order to detect *Trichinella* spp. larvae using the artificial digestion method or the latex agglutination test according to Commission Regulation (EC) No. 2075/2005.

24.2. Measures in place[(b)]

A positive tested batch at a slaughterhouse would be traced back and contaminated carcasses would be disposed.

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

Trichinellosis in animals is notifiable (TSV, Article 5).

24.4. Results of investigations and national evaluation of the situation, the trends [(d)] and sources of infection[(e)]

In 2023, 2'310'961 slaughter pigs (94.1% of all slaughtered pigs) were tested for *Trichinella*. All results were negative. Although the risk of the parasite cycle crossing from the wild animal population into the conventional domestic pig population can be regarded as negligible, the risk has to be categorized differently or higher with regard to the special situation of grazing pigs. As all results were negative since many years in domestic pigs, it is highly unlikely that *Trichinella* infections acquired from domestic pig meat originating from Switzerland will occur in humans.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, limit of detection of the method, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

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

25. General evaluation*: Shiga toxin-producing *E. coli* (STEC)

25.1. History of the disease and/or infection in the country[(a)]

Detection of STEC in humans is notifiable (Ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Children under 5 years were the age group mostly affected, ranging between 3 and 9 reports per 100'000 inhabitants.
Ruminants are an important reservoir for STEC. Shiga toxin genes (*stx*) are frequently found in (young) Swiss cattle at slaughter, but isolation of STEC strains may be a challenge.
Recent studies investigating the occurrence of STEC in food samples comprised raw milk cheeses, raw meat products, raw milk, fresh herbs, flour and game meat.
In a master thesis recently completed at the Institute for Food Safety and Hygiene of the University of Zurich (sample survey 2021), no STEC were detected in 100 raw milk alpine cheeses from different regions of Switzerland. In 2017, 51 raw milk cheeses and 53 raw meat products from 63 different farms in 9 different Swiss cantons were tested. STEC were isolated from 2.0% (1 out of 51) of the raw milk cheeses and in 1.9% (1 out of 53) of the raw meat products.
In the same year (2017), 73 samples from raw milk sold directly from farms to consumers were tested for their microbiological quality. STEC were thereby not found in any of the 73 raw milk samples (61 from raw milk vending machines and 12 pre-filled bottles).
With regard to fresh herbs collected at retail level, a study (master thesis P. Kindle, 2017) examining the occurrence of selected bacterial pathogens did not find STEC in 70 samples (16 of them imported from foreign countries).
In 2018, 70 flour samples tested for STEC. The reason for this was that dough made from wheat flour had led to STEC infections in the USA. Nine (12.9%) of the 70 flour samples tested positive for genes encoding Shiga toxin (*stx*). In an additional study, 93 flour samples were collected at Swiss retail markets and 10 (10.8%) of them tested positive for stx_1 and/or stx_2 by PCR assay. 10 STEC strains were isolated and further characterized by PCR assays and whole genome sequencing (WGS).
Of 92 game meat samples (red deer, roe deer, wild boar, chamois; sampling in November 2021) from Switzerland and other European countries, 78 (84.8%) game meat samples were found to be positive for Shiga toxin-encoding genes (*stx*) after enrichment. STEC were isolated from 23 (25.0%) of the samples and further characterized by PCR assays and whole genome sequencing (WGS). Overall, the pathogenic potential of STEC in game meat is moderate, though the isolation of one STEC strain carrying stx_{2a}, and of STEC/ExPEC hybrids suggests a role of game meat as a potential source of STEC infections in humans.
In a study published in 2024, the occurrence of STEC in a total of 59 faecal samples of hunted wild boars (*Sus scrofa*) from two different regions in Switzerland was determined and the isolates characterised using a whole genome sequencing approach. After an enrichment step, Shiga-toxin encoding genes (*stx*) were detected by real-time PCR in 24 (41%) of the samples, and STEC were subsequently recovered from 13 (22%) of the same samples. Seven different serotypes and six different sequence types (STs) were found. The results show that wild boars are carriers of STEC which may be distributed in the environment, possibly leading to the contamination of agricultural crops and water sources.

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

In 2023, 1224 laboratory confirmed cases of human STEC infections were registered. The notification rate was 13.8 per 100'000 inhabitants (2022: 1203 cases, 13.6/100'000). There were more women (55%) than men (45%) affected. No source of infection could be identified. The number of HUS is stable with 23 cases in 2023 (22 cases in 2022), thereof 6 were children under 5 years of age and 11 were adults over 65 years of age.
Reported STEC cases in humans are on the rise since 2014. As most of the laboratories did not routinely test for STEC until then, it is very likely that the impact of STEC was underestimated. New diagnostic tools might have led to more samples being analyzed for STEC.
In view of the low infectious dose of STEC (<100 microorganisms) an infection via contaminated food or water is easily possible. Strict maintenance of good hygiene practices at slaughter and in the context of milk production is of central importance to ensure both public health protection and meat quality. In addition, thorough cooking of critical foods prevents infection with STEC originally present in raw products.

25.3. Any recent specific action in the Member State or suggested for the European Union[b]
Several studies relating to Shiga toxin-producing *E. coli* in foodstuffs, in humans and animals were performed by the national reference laboratory to generate new information in the past years.

25.4. Additional information

[1] See previous national reports for additional information and website of the FSVO.

[2] Isler et al. (2021). Animal petting zoos as sources of Shiga toxin-producing *Escherichia coli* (STEC), *Salmonella*, and extended-spectrum ß-lactamase (ESBL)-producing Enterobacteriaceae. Zoonoses and Public Health:

Animal petting zoos and farm fairs provide the opportunity for children and adults to interact with animals, but contact with animals carries a risk of exposure to zoonotic pathogens and antimicrobial-resistant bacteria. The aim of this study was to assess the occurrence of Shiga toxin-producing *Escherichia coli* (STEC), *Salmonella*, extended-spectrum β-lactamase (ESBL)-producing Enterobacteriaceae and methicillin-resistant Staphylococcus aureus (MRSA) in animal faeces from six animal petting zoos and one farm fair in Switzerland. Furthermore, hygiene facilities on the venues were evaluated. Of 163 faecal samples, 75 contained stx_1, stx_2 or stx_1/ stx_2 genes, indicating the presence of STEC. Positive samples included faeces from sika deer (100%), sheep (92%), goats (88%), mouflons (80%), camels (62%), llamas (50%), yaks (50%), pigs (29%) and donkeys (6%), whereas no Shiga toxin genes were found in faeces of calves, guinea pigs, hens, ostriches, ponies, zebras or zebus. On all animal petting venues, there were inadequacies with regard to access to hygiene information and handwashing hygiene facilities. This study provides data that underscore the importance of hygiene measures to minimize the risk of transmission of zoonotic pathogens and MDR, ESBL-producing *E. coli* to visitors of animal petting venues.

[3] In 2020, a master thesis "Prevalence of Shigatoxin-producing *E. coli* in fecal samples of Lama (*Lama glama*) and Alpaca (*Vicugna pacos*) in Switzerland" was conducted at the Institute for Food Safety and Hygiene (ILS), Vetsuisse Faculty University of Zurich: A total of 96 pooled fecal samples were collected from 22 different farms in different regions of Switzerland. For the occurrence of STEC, 9.4% (9/96) of the fecal samples were positive for stx_1 only, 41.7% (40/96) for stx_2 only and 3.1% (3/96) for both stx_1 and stx_2. Five STEC strains were isolated and further characterized by Whole Genome Sequencing, resulting in two strains of the serotype O166:H28, two others belonging to the serotype O76:H19 and one of serotype O150:H2. All five strains harbored stx_1 and *ehx*A, while only three strains were positive for stx_2 as well. Only in the O150:H2 strain the intimin gene (*eae*) could be detected.

[4] Treier et al. (2021). High occurrence of Shiga toxin-producing Escherichia coli in raw meat-based diets for companion animals – a public health issue. Microorganisms.

Feeding pets raw meat-based diets (RMBDs) is becoming increasingly popular but comes with a risk of pathogenic bacteria, including Shiga toxin-producing Escherichia coli (STEC). In humans, STEC may cause gastrointestinal illnesses, including diarrhea, hemorrhagic colitis (HC), and the hemolytic uremic syndrome (HUS). The aim of this study was to evaluate commercially available RMBDs with regard to the occurrence of STEC. Of 59 RMBD samples, 59% tested positive by real-time PCR for the presence of Shiga toxin genes stx_1 and/or stx_2. STEC were recovered from 41% of the 59 samples, and strains were subjected to serotyping and virulence gene profiling, using whole genome sequencing (WGS)-based methods. Of 28 strains, 29% carried stx_{2a} or stx_{2d}, which are linked to STEC with high pathogenic potential. Twenty different serotypes were identified, including STEC O26:H11, O91:H10, O91:H14, O145:H28, O146:H21 and O146:H28, which are within the most common non-O157 serogroups associated with human STEC-related illnesses worldwide. Considering the low infectious dose and potential severity of disease manifestations, the high occurrence of STEC in RMBDs poses an important health risk for persons handling raw pet food and persons with close contact to pets fed on RMBDs, and is of concern in the field of public health.

[5] Nüesch-Inderbinen, M., Treier, A., Stevens, M., Stephan, R. (2023). Whole genome sequence-based characterisation of Shiga toxin-producing Escherichia coli isolated from game meat from several European countries. Scientific Reports 13:3247. https://doi.org/10.1038/s41598-023-30333-4

The aim of this study was to assess the occurrence of STEC in 92 meat samples from chamois (n=2), red deer (n=27), roe deer (n=38), and wild boar (n=25), from Switzerland and other European countries. After enrichment, Shiga-toxin encoding genes (stx) were detected by PCR in 78 (84%) of the samples and STEC were isolated from 23 (25%) of the same samples. Nine different serotypes and eight different sequence types (STs) were found, with O146:H28 ST738 (n=10) and O110:H31 ST812

(n=5) predominating. None of the STEC belonged to the so-called top-five serogroups O26, O103, O111, O145, and O157. Subtyping of stx identified stx1c (n=9), stx2a (n=1), stx2b (n=19), stx2e (n=2), and stx2g (n=1). Additional virulence factors (VFs) comprised ehx (n=12), iha (n=21), sta1 (n=1), and subAB (n=19). None of the isolates contained the eae gene. Twenty-one STEC contained VFs associated with extra-intestinal pathogenic E. coli (ExPEC). Overall, the pathogenic potential of STEC in game meat is moderate, though the isolation of one STEC strain carrying stx2a, and of STEC/ExPEC hybrids suggests a role of game meat as a potential source of STEC infections in humans. Therefore, detailed knowledge of the safe handling and preparation of game meat is needed to prevent foodborne infections.

[6] Nüesch-Inderbinen, M., Barmettler, K., Stevens, M.J.A., Cernela, N., Stephan, R. (2024). Shiga toxin-producing *Escherichia coli* isolated from hunted wild boar (*Sus scrofa*) in Switzerland. Schweizer Archiv für Tierheilkunde 166, 131–140. https://doi.org/10.17236/sat00 419

The aim of this study was to determine the occurrence of STEC in a total of 59 faecal samples of hunted wild boars (*Sus scrofa*) from two different regions in Switzerland and to characterise the isolates using a whole genome sequencing approach. After an enrichment step, Shiga-toxin encoding genes (*stx*) were detected by real-time PCR in 24 (41%) of the samples, and STEC were subsequently recovered from 13 (22%) of the same samples. Seven different serotypes and six different sequence types (STs) were found, with O146:H28 ST738 (n = 4) and O100:H20 ST2514 (n = 4) predominating. Subtyping of *stx* identified isolates with *stx1c/stx2b* (n = 1), *stx2a* (n = 1), *stx2b* (n = 6), and *stx2e* (n = 6). No isolate contained the *eae* gene, but all harboured additional virulence genes, most commonly *astA* (n = 10), *hlyE* (n = 9), and *hra* (n = 9). STEC O11:H5, O21:H21, and O146:H28 harboured virulence factors associated with extra-intestinal pathogenic *E. coli* (ExPEC), and STEC O100:H20 and O155:H26 possessed *sta1* and/or *stb* and were STEC/enterotoxigenic *E. coli* (ETEC) hybrid pathotypes. The results show that wild boars are carriers of STEC which may be distributed in the environment, possibly leading to the contamination of agricultural crops and water sources. Some of the serotypes including STEC/ExPEC O146:H28 may have moderate zoonotic potential, with implications for public health. Because *stx2e* and *sta/stb* are typically associated with infection in pigs, STEC/ETEC O100:H20 in wild boars may be relevant to animal husbandry, especially to free-range systems of farming because of the potential risk of transmission events at the wildlife–livestock interface.

* **For each zoonotic agent**

(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official “disease status” to be specified for the whole country and/or specific regions within the country

(b): If applicable

Switzerland

26. General evaluation*: West Nile virus

26.1. History of the disease and/or infection in the country[(a)]

WNF in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases) and in animals (TSV, Article 5: disease to be monitored).

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

Up to date, no autochthonous cases in humans or animals were reported in Switzerland. Since 2010 five confirmed "imported" human cases were reported in Switzerland, who acquired their infection abroad (2012: 1x Kosovo; 2013: 1x Croatia, 2019: 1x Egypt, 2020: 1x Spain, 2023: 1x Turkey).
In 2023, 13 horses were tested negative for WNV using RT-qPCR. In general horses and donkeys should only be examined for WNV if they show neurological symptoms of unknown origin and if they were not vaccinated.
In 2023, in total 15 birds (9 from zoos and 6 wild birds) were tested negative for WNV using RT-qPCR at the National Reference Center for Poultry and Rabbit Diseases, University of Zurich.
Since 2010, the Institute of Microbiology of the University of Applied Sciences and Arts of Southern Switzerland (SUPSI) performs a surveillance in mosquitoes for flaviviruses in the Canton of Ticino, which is very close to a big endemic area for WNV in Northern Italy. During the 2023 season starting from April to mid-October, 13 sites were monitored with a total of 124 traps and over 17'000 mosquitoes (*Culex pipiens/torrentium)* collected.
Pools of Cx. pipiens/torrentium and FTA (Flinders Technology Associates) cards have been analyzed for flaviviruses by molecular methods. In 2023, in 5 of the 13 sites WNV could be detected. The first positive mosquito pool was discovered in mid-July 2023.So far, there has been no reports of cases of WNF in a person infected in Switzerland (no autochthonous cases).

26.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

Disease awareness in Switzerland was strengthened. The WNF situation - with a special focus on neighboring countries – is evaluated regularly. If cases in animals or humans appear, the Federal Food Safety and Veterinary Office and the Federal Office of Public Health will inquire immediately. A vaccine for horses was approved in 2011.

26.4. Additional information

See previous national reports for additional information and website of the FSVO.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

27. General evaluation*: *Yersinia*

27.1. History of the disease and/or infection in the country[(a)]

Yersiniosis in humans is not notifiable. In animals, yersiniosis is not notifiable anymore since 2023.

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

No official data for human Yersiniosis case reports are available because, in Switzerland, yersiniosis is not a notifiable disease. However, the number of human samples sent to the national reference laboratory NENT are at least an indicator for the recent situation. In 2023, NENT tested 94 human samples positive for *Yersinia* which is a decrease compared to the previous year (2022 106 positive samples). They found 88 *Y. enterocolitica*, 3 *Y. fredericksenii,* 2 *Y. intermedia* and 1 *Y. pseudotuberculosis*.
Since 2023, yersiniosis is no longer a notifiable animal disease.
In a countrywide survey conducted in 2013 the overall prevalence of *Y. enterocolitica* in Swiss slaughter pigs was 56% using PSB enrichment and alkaline treatment for isolation. Other isolation methods are significantly less sensitive. *Yersinia enterocolitica* bioserotype 4/O:3 (74%) was the most common bioserotype in this study, followed by bioserotype 3/O:5,27 (17%). Data on contamination rates of Swiss pig and beef meat are not available.

27.3. Any recent specific action in the Member State or suggested for the European Union[(b)]

In a project [5] 149 clinical human strains isolated between 2019 and 2023 were further typed using a whole genome sequencing (WGS) approach (MiniSeq; Illumina). Sequence types (STs) were determined in silico from the WGS data using the cgMLST SeqSphere+ scheme. Antimicrobial resistance genes were identified using the Resistance Gene Identifier (RGI), and virulence genes were identified using the virulence factor database (VFDB).
In a further cross-sectional study [6] 58 raw pork meat samples were collected during 2024 on retail level in Switzerland. 21 (36.2%) of 58 samples tested positive for *Y. enterocolitica* after enrichment. In two samples *Y. enterocolitica* were also detected quantitatively (20 cfu/g; detection limit 10 cfu/g). Overall, based on cgMLST analysis a high degree of genetic diversity was observed for the isolated strains. Only 3 of the 21 strains belonged to the *Y. enterocolitica* biotype 4 serotype O:3 MLST ST18 (harbouring the *ail* gene, encoding an attachment invasion locus protein which is the main virulence factor), which is the most prevalent "pathogenic" subtype linked to clinical cases in Switzerland. The other strains were typed as ST3 (n=9), ST8 (n=1), ST158 (n=1) and STnd, which all belong to *Y. enterocolitica* biotype 1A. Even *Y. enterocolitica* biotype 1A is described as non-pathogenic, this is the most prevalent biovar isolated from human clinical samples in Switzerland. All strains were susceptible against ciprofloxacin, sulfamethoxazole-trimethoprim, fosfomycin, azithromycin, nitrofurantoin, gentamicin, kanamycin.

27.4. Additional information

[1] See previous national reports for additional information and website of the FSVO.
[2] Katharina Meidinger, 2013: Countrywide survey on the detection and biotype distribution of *Yersinia enterocolitica* from slaughter pigs in Switzerland, Inaugural Dissertation to be rewarded the Doctoral Degree of the Vetsuisse Faculty University of Bern.
[3] M Schneeberger et al., 2015: Virulence-associated gene pattern of porcine and human *Yersinia enterocolitica* biotype 4 isolates. Int J Food Microbiol, 2015, 198:70-4.
[4] Hahn, K., et al. (2021). *Yersinia pseudotuberculosis* serotype O:1 infection in a captive Seba's short tailed-fruit bat (*Carollia perspicillata*) colony in Switzerland. BMC Veterinary Research.
[5] Stevens, M., Horlborg, J., Diethelm, A., Stephan, R. Nüesch-Inderbinen, M. Comparative genome analysis of human *Yersinia enterocolitica* isolated in Switzerland between 2019 and 2023. submitted.
[6] Kelbert, L., Boss, S., Barmettler, K., Stevens, M.J.A., Cernela, N., Stephan, R. (2024). Occurrence and characteristics of *Yersinia enterocolitica* in pork collected at retail level in Switzerland. submitted

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

28. Food-borne Outbreaks

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

The Swiss Federal Office of Public Health (FOPH) coordinates the national surveillance of communicable diseases. Notifications of physicians and laboratories are made to cantonal (regional) health authorities and to the FOPH under the provisions of the public health legislation, namely the Ordinance on Disease Notification of December 1 2015. Under this scheme, data provided for each notification depend on its supplier: (i) laboratories report diagnostic confirmations (subtype, method, material) while for selected diseases (ii) physicians additionally cover the subsidiaries of clinical diagnosis, exposition, development and measures. Besides the case-oriented reporting, physicians also have to report observations of unexpected clusters of any communicable disease. At the FOPH, the combined notifications of laboratories and physicians are analyzed and published in the weekly Bulletin.

The surveillance of food-borne infectious agents follows the mandatory system. The laboratories are required to report identifications of *Salmonella* causing gastroenteritis, *Salmonella* Typhi, *Salmonella* Paratyphi, *Campylobacter spp., Shigella* spp., Shigatoxin-producing *Escherichia coli*, *Listeria monocytogenes*, *Clostridium botulinum* and hepatitis A virus. A complementary notification by physicians is required for typhoid/paratyphoid fever, diseases associated with Shigatoxin-producing *Escherichia coli*, botulism, hepatitis A. Following a modification of the Ordinance on Disease Notification, laboratories are additionally required to report identifications of *Trichinella* spp. since January 1 2009 and hepatitis E virus since January 1 2018.

Basically, the responsibility for outbreak investigations lies with the cantonal authorities. Relevant data of food-borne outbreaks are reported to the Federal Food Safety and Veterinary Office (FSVO) in a standardized format as soon as the investigations are accomplished. On request, the FSVO and FOPH offer the cantons their expertise in epidemiology, infectious diseases, food microbiology, risk assessment and risk management. However, under the Federal Law on the Control of Human Communicable Diseases of Man and the Federal Law on Food-Stuffs and Utility Articles, the central government, respectively the FSVO and FOPH, have the duty to supervise the enforcement of the concerned legislations. In cases of outbreaks which are not limited to the territory of one canton, the federal authorities have the competence to coordinate, and if necessary, to direct control actions and information activities of the cantons. In such a situation, the concerned federal offices can conduct their own epidemiological investigations in cooperation with national reference laboratories. In the field of food-borne diseases, the Federal Offices are supported by the National Centre for Enteropathogenic Bacteria and *Listeria* (NENT). This reference laboratory disposes of the facilities, techniques and agents required not only to confirm results from other laboratories but also for epidemiological typing (serotyping and molecular typing) of various bacterial pathogens.

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

The outbreaks were categorized according to the Manual for reporting on food-borne outbreaks in accordance with Directive 2003/99/EC.

28.3. National evaluation of the reported outbreaks in the country[(a)]

In 2023, 40 outbreaks were reported throughout Switzerland by the supervisory authorities. In total, more than 260 people became ill, at least 40 people were hospitalized, and six deaths occurred.
For the majority of the outbreaks (38), only one canton was involved. In the remaining two cases, one involved at least three cantons and the last one involved 10 cantons.
The number of reported outbreaks in Switzerland was relatively stable until 2020. However, a significant increase was observed in 2021 and this number was maintained not only in 2022 but also in 2023.
Since 2019, the Federal Food Safety and Veterinary Office (FSVO) has been working to raise awareness of the importance of reporting cases among the various authorities concerned, and has provided the authorities with the necessary investigation tools during such events (Investigation manuals for foodborne outbreaks (admin.ch)). The increase in the number of cases may reflect improved awareness. Moreover, small outbreaks associated with a small number of people are now also reported more systematically, even if their cause has not yet been identified.
In 13 of the 40 reported outbreaks, it was possible to identify the causative agent with a high probability. However, the food at the origin of the infection could only be identified with strong evidence in two outbreaks. Restaurants and similar locations for collective catering were the most frequent settings of outbreaks.

28.4. Descriptions of single outbreaks of special interest

A couple became ill after eating raw tuna tartare in a restaurant. One hour after eating, the man had symptoms of redness and heat over various parts of his body, tingling in the palms of his hands and soles of his feet, an accelerated heart rate and a severe headache. The woman experienced the same symptoms, but two and a half hours after eating. When the inspectors arrived at the restaurant, the tuna tartare was no longer available. A sample of a similar product, stored in the restaurant in the same way as the product consumed, but from a different batch, was then taken. The biogenic amine histamine was found in the sample at a concentration ten times higher than the permitted limit (RS 817.024.1). Bacteria were also found, indicating severe spoilage. The most likely cause of the poisoning was therefore the presence of this histamine in the tuna consumed by the two diners. The investigation of the restaurant owner revealed shortcomings in the preservation and storage of the raw fish and in the maintenance of the cold chain.

The national outbreak of listeriosis affecting 23 people, including five deaths, deserves mention. An unusually high number of cases of listeriosis were reported to the Swiss Federal Office of Public Health in 2023. The genetic analyses carried out, Whole Genome Sequencing, confirmed that these were a series of related cases, which in turn were linked to cases in 2022. In-depth investigations were carried out.

28.5. Control measures or other actions taken to improve the situation

2021 was the year of the final phase of a project, initiated in 2019 by the competent federal authorities, to create the tools needed to investigate food-borne outbreaks. All the tools have been available to the supervisory authorities since the beginning of 2022.
Investigation manuals for foodborne outbreaks (admin.ch)

28.6. Any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation

None.

(a): Trends in numbers of outbreaks and numbers of human cases involved, relevance of the different causative agents, food categories and the agent/food category combinations, relevance of the different type of places of food production and preparation in outbreaks, evaluation of the severity of the human cases.

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

The department of Animal Health of the Federal Food Safety and Veterinary Office (FSVO) is the competent authority to design, coordinate and report the AMR-Monitoring Program according to EFSA specifications. The competent cantonal veterinary offices are responsible for taking the caecal samples at slaughterhouses and sending them to the NRL. The competent cantonal chemists are responsible for taking the meat samples in retail stores and sending them to the NRL. The department of Food Safety of the Federal Food Safety and Veterinary Office (FSVO) is responsible for taking beaf meat samples at border control posts (BCPs). Pig meat did not enter the EU at BCPs in Switzerland. The Centre for Zoonoses, Bacterial Animal Diseases and Antibiotic Resistance, University of Bern, Switzerland (ZOBA) is the NRL and responsible for the isolation of the bacteria and the AMR testing. All results are transmitted periodically to the Federal Laboratory Database ARes.

Short description of the institutions and laboratories involved in data collection and reporting

30. General Antimicrobial Resistance Evaluation

30.1 Situation and epidemiological evolution (trends and sources) regarding AMR to critically important antimicrobials[(a)] (CIAs) over time until recent situation

Overall, increasing and decreasing trends in antimicrobial resistance in zoonotic and indicator bacteria isolated from broiler and meat thereof were detected in comparison to 2021.
Antimicrobial resistance rates of *Campylobacter coli* from fattening pigs showed no significant changes for ciprofloxacin and a decrease for tetracycline compared to 2021. *Campylobacter jejuni* showed no significant changes in resistance rates for ciprofloxcacin and a decrease for tetracycline resistance compared to 2021.
Antimicrobial resistance rates of indicator *Escherichia coli* fromfattening pigs showed decreased resistance rates to tetracycline compared to 2021. Resistance to cefotaxime, ceftazidime meropenem and colistin resistance was not detected. Antimicrobial resistance rates of indicator ***Escherichia coli*** showed no significant changes compared to 2021. Resistance to cefotaxime and ceftazidime was detected in six isolates, Meropenem and colistin resistance was not detected.
With selective enrichment the detection rate of ESBL-producing *Escherichia coli* in fattening pigs was stable at 6.2%. The ESBL prevalence in calves under 1 year increased slightly to 32.7%. Moreover, the overall detection rate of ESBL-producing *Escherichia coli* inpig and beef meat at retail level and taken at border control posts was very low (<=1%)
With selective enrichment the detection rate of Carbapenemase-producing *Escherichia coli* was zero (0%) for fattening pigs, calves under 1 year, pig and beef meat at retail level and taken at border control posts.
In total 31 *Salmonella* isolates from pigs and cattle were tested, no isolate was confirmed as ESBL-producing strain. No carbapenemase-producing isolate was detected.
The MRSA prevalence was stable at 54% for fattening pigs in 2023 and decreased to 3.6% in calves under 1 year.

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

The high fluoroquinolones resistance rates in *Campylobacter jejuni* and *Campylobacter coli* from pigs and calves under 1 year are of minor importance for public health, as ***Campylobacter f***rom these these livestock species are not the main reservoirs for human campylobacteriosisare The low detection rate of ESBL-producing *Escherichia coli* in fattening pigs and pig and beef meat is desirable.. Moreover, until now all matrices analyzed withing the framework of this monitoring, no Carbapenemase-producing *Escherichia coli* was detected.

30.3 Recent actions taken to control AMR in food producing animals and food

No specific measures are ongoing.

30.4 Any specific action decided in the Member State or suggestions to the European Union for actions to be taken against food-borne AMR threat

A national strategy to combat antibiotic resistance (StAR) has been developed and implemented. It follows the one health approach covering public and veterinary health and the environment as well. It includes fields in different sectors (regulatory, prudent use, surveillance, research, control in hospitals etc.) with the long-term objective to ensure the effectiveness of antimicrobials for humans and animals in order to preserve their health. For further information see https://www.star.admin.ch/star/en/home.html.

30.5 Additional information

Based on the import data of 2021, no pig meat was imported into Switzerland via the two border control posts Geneva and Zurich from third countries, therefore no pig meat samples from border control posts were taken.

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

(a): The CIAs depends on the bacterial species considered and the harmonised set of substances tested within the framework of the harmonised monitoring:
- For *Campylobacter* spp., macrolides (erythromycin) and fluoroquinolones (ciprofloxacin);
- For *Salmonella* and *E. coli*, 3rd and 4th generation cephalosporins (cefotaxime) and fluoroquinolones (ciprofloxacin) and colistin (polymyxin);

31. General Description of Antimicrobial Resistance Monitoring; *Campylobacter coli* from caecum of fattening pigs

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

31.2. Stratification procedure per animal population and food category

The four slaughterhouses included in the monitoring program produce over 60% of slaughtered pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

31.3. Randomisation procedure per animal population and food category

A random sample of 308 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Direct detection of *Campylobacter coli* according to ISO 10272 using mCCDA agar plates was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUCAMP3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

31.6. Results of investigation

Antimicrobial resistance rates of 241 *Campylobacter coli* from fattening pigs showed very high resistance rates against ciprofloxacin (59%). Resistance against tetracycline decreased, but is still high (59%).

31.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

32. General Description of Antimicrobial Resistance Monitoring; *Campylobacter jejuni/coli* from caecum of calves under 1 year

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

32.2. Stratification procedure per animal population and food category

The five slaughterhouses included in the monitoring program produce over 60% of slaughtered calves under 1 year. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

32.3. Randomisation procedure per animal population and food category

A random sample of 306 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Direct detection of *Campylobacter coli* according to ISO 10272 using mCCDA agar plates was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUCAMP3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

32.6. Results of investigation

Antimicrobial resistance rates of 154 *Campylobacter jejuni* from calves under 1 year showed very high resistance rates against ciprofloxacin (55%). Resistance against tetracycline decreased, but is still high (36%). Only eight ***Campylobacter coli*** were isolated.

32.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

33. General Description of Antimicrobial Resistance Monitoring; indicator *Escherichia coli* from caecum of fattening pigs

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

33.2. Stratification procedure per animal population and food category

The four slaughterhouses included in the monitoring program produce over 60% of slaughtered broilers. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

33.3. Randomisation procedure per animal population and food category

A random sample of 202 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Direct detection of indicator *E. coli* on Mac Conkey Agar was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729. If ESBL/CARBA-suspicious isolates occur, the EUVSEC2 plate was used additionally for confirmation.

33.6. Results of investigation

Antimicrobial resistance rates of 201 indicator *Escherichia coli* showed decreased resistance rates to tetracycline (16%) compared to 2021 (30%). Resistance to cefotaxime, ceftazidime, meropenem and colistin was not detected.,

33.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

34. General Description of Antimicrobial Resistance Monitoring; indicator *Escherichia coli* from caecum of calves under 1 year

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

34.2. Stratification procedure per animal population and food category

The five slaughterhouses included in the monitoring program produce over 60% of slaughtered broilers. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

34.3. Randomisation procedure per animal population and food category

A random sample of 197 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Direct detection of indicator *E. coli* on Mac Conkey Agar was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729. If ESBL/CARBA-suspicious isolates occur, the EUVSEC2 plate was used additionally for confirmation.

34.6. Results of investigation

Antimicrobial resistance rates of 190 indicator *Escherichia coli* showed no significant changes compared to 2021. Resistance to cefotaxime and ceftazidime was detected in six isolates, Meropenem and colistin resistance was not detected.,

34.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

35. General Description of Antimicrobial Resistance Monitoring; ESBL-producing *Escherichia coli* from caecum of fattening pigs

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

35.2. Stratification procedure per animal population and food category

The four slaughterhouses included in the monitoring program produce over 60% of slaughtered broilers. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

35.3. Randomisation procedure per animal population and food category

A random sample of 308 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Selective enrichment for ESBL-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the Mac Conkey Agar with Cefotaxime before MIC testing was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

35.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *Escherichia coli* in fattening pigs was stable with 6.2% in 2023 compared to 5.9% in 2021.

35.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

36. General Description of Antimicrobial Resistance Monitoring; ESBL-producing *Escherichia coli* from caecum of calves under 1 year

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

36.2. Stratification procedure per animal population and food category

The five slaughterhouses included in the monitoring program produce over 60% of slaughtered broilers. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

36.3. Randomisation procedure per animal population and food category

A random sample of 306 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Selective enrichment for ESBL-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the Mac Conkey Agar with Cefotaxime before MIC testing was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

36.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *Escherichia coli* in calves under 1 year increased from 23.8% in 2021 to 32.7% in 2023.

36.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

37. General Description of Antimicrobial Resistance Monitoring; ESBL-producing Escherichia coli from pig meat

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

37.2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers. No pig meat consumed in Switzerland is imported. Hence, solely domestic meat was sampled.

37.3. Randomisation procedure per animal population and food category

A random sample of 309 meat samples for selective enrichment method was analyzed. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

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

Selective enrichment for ESBL-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the Mac Conkey Agar with Cefotaxime before MIC testing was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

37.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *Escherichia coli* was low at 1% for pig meat.

37.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

38. General Description of Antimicrobial Resistance Monitoring; ESBL-producing *Escherichia coli* from beef meat

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competetent authorities.

38.2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers. About 15% of beef meat consumed in Switzerland is imported. Hence, 85% domestic meat and 15% meat from abroad was sampled.

38.3. Randomisation procedure per animal population and food category

A random sample of 308 meat samples for selective enrichment method was analyzed. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

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

Selective enrichment for ESBL-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the Mac Conkey Agar with Cefotaxime before MIC testing was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

38.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *Escherichia coli* was low at 0.7% in beef meat

38.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

39. General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *Escherichia coli* from caecum of fattening pigs

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

39.2. Stratification procedure per animal population and food category

The four slaughterhouses included in the monitoring program produce over 60% of slaughtered broilers. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

39.3. Randomisation procedure per animal population and food category

A random sample of 308 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Selective enrichment for carbapenemase-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate and Carba Blue test. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

39.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *Escherichia coli* was zero (0%).

39.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

40. General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *Escherichia coli* from caecum of calves under 1 year

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

40.2. Stratification procedure per animal population and food category

The five slaughterhouses included in the monitoring program produce over 60% of slaughtered broilers. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

40.3. Randomisation procedure per animal population and food category

A random sample of 306 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

Selective enrichment for carbapenemase-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate and Carba Blue test. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

40.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *Escherichia coli* was zero (0%).

40.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

41. General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *Escherichia coli* from pig meat

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

41.2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers. No pig meat consumed in Switzerland is imported. Hence, solely domestic meat was sampled.

41.3. Randomisation procedure per animal population and food category

A random sample of 309 meat samples for selective enrichment method was analyzed. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

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

Selective enrichment for carbapenemase-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate and Carba blue test. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

41.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *Escherichia coli* was zero (0%).

41.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

42. General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *Escherichia coli* from beef meat

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

42.2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers. About 15% of beef meat consumed in Switzerland is imported. Hence, 85% domestic meat and 15% meat from abroad was sampled.

42.3. Randomisation procedure per animal population and food category

A random sample of 308 meat samples for selective enrichment method was analyzed. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

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

Selective enrichment for carbapenemase-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate and Carba blue test. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

42.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *Escherichia coli* was zero (0%).

42.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

43. General Description of Antimicrobial Resistance Monitoring; Indicator *Escherichia coli* from beef meat taken at border control posts

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

43.2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered at the two Swiss border control posts in Zurich and Geneva based on their individual import volume in 2021.

43.3. Randomisation procedure per animal population and food category

A random sample of 58 meat samples for selective enrichment method was analyzed. The samples could be taken from Monday to Friday.

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

Direct detection of indicator *Escherichia coli* on Mac Conkey Agar was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

43.6. Results of investigation

Twenty-four *Escherichia coli* strains were isolated. No resistance against ciprofloxacin, cefotaxim, ceftazidime, meropenem and colistin was detected.

43.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

44. General Description of Antimicrobial Resistance Monitoring; ESBL-producing *Escherichia coli* from beef meat taken at border control posts

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

44.2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered at the two Swiss border control posts in Zurich and Geneva based on their individual import volume in 2021.

44.3. Randomisation procedure per animal population and food category

A random sample of 58 meat samples for selective enrichment method was analyzed. The samples could be taken from Monday to Friday.

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

Selective enrichment for ESBL-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the Mac Conkey Agar with Cefotaxime before MIC testing was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

44.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *Escherichia coli* was zero (0%) in beef meat from third countries.

44.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

45. General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *Escherichia coli* from beef meat taken at border control posts

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

45.2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered at the two Swiss border control posts in Zurich and Geneva based on their individual import volume in 2021.

45.3. Randomisation procedure per animal population and food category

A random sample of 58 meat samples for selective enrichment method was analyzed. The samples could be taken from Monday to Friday.

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

Selective enrichment for carbapenemase-producing *Escherichia coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate and Carba blue test. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

45.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *Escherichia coli* was zero (0%) in beef meat from third countries.

45.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

46. General Description of Antimicrobial Resistance Monitoring; Salmonella spp. / diverse livestock species

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

The prevalence of *Salmonella* spp. in food-producing animals in Switzerland is very low as a consequence of long-term control programs. There is no national control plan in place for pigs and cattle. Therefore, isolates from diagnostic submissions from pigs and cattle were analysed.

46.2. Stratification procedure per animal population and food category

All *Salmonella enterica* subspecies *enterica* isolates from pigs and cattle serotyped at the national reference laboratory in 2023 were tested for AMR.

46.3. Randomisation procedure per animal population and food category

No randomisation take place. A total of 60 *Salmonella* isolates were tested.

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

Identification and serotyping according to ISO 6579 was performed.

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (Thermo Fisher Scientific). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729. If ESBL or CARBA suspicious isolates occurred, the EUVSEC2 plate was used for confirmation.

46.6. Results of investigation

In total 31 *Salmonella* isolates were tested, no ESBL-producing nor carbapenem-resistant isolate was detected.

46.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

47. General Description of Antimicrobial Resistance Monitoring; MRSA / nasal swabs of fattening pigs

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

47.2. Stratification procedure per animal population and food category

The four slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

47.3. Randomisation procedure per animal population and food category

A random sample of 310 nasal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

One step selective enrichment for MRSA published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Confirmation of Methicillin resistance was performed by *mec*A Gen PCR, additionally CC398 was analysed according to published methods (Stegger et al., 2011). Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany)).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUST2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

47.6. Library preparation used

Sequencing was not performed.

47.7. Version of the predictive tool

Sequencing was not performed.

47.8. Results of investigation

With selective enrichment the MRSA prevalence in fattening pigs (54%) is comparable high as in 2021 (54%). All isolates were livestock-associated MRSA.

47.9. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp..

(c): Antimicrobials included, Cut-off values

48. General Description of Antimicrobial Resistance Monitoring; MRSA / nasal swabs of calves under one year

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

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

48.2. Stratification procedure per animal population and food category

The four slaughterhouses included in the monitoring program produce over 60% of slaughtered calves under one year. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

48.3. Randomisation procedure per animal population and food category

A random sample of 307 nasal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

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

One step selective enrichment for MRSA published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Confirmation of Methicillin resistance was performed by *mec*A Gen PCR, additionally CC398 was analysed according to published methods (Stegger et al., 2011). Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany)).

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUST2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/2020/1729.

48.6. Library preparation used

Sequencing was not performed.

48.7. Version of the predictive tool

Sequencing was not performed.

48.8. Results of investigation

With selective enrichment the MRSA prevalence in calves under one year decreased slightly from 6.1% in 2021 to 3.6% in 2023, which was the prevalence in 2019. All isolates except one strain were livestock-associated MRSA.

48.9. Additional information

Further information will be found in the Swiss antibiotic resistance report 2024 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the FSVO website.

*** to be filled in per combination of bacterial species/matrix**

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp..

(c): Antimicrobials included, Cut-off values