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 2021

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 2021.

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)	33,091	1,513,701	584,135
Gallus gallus (fowl)	Gallus gallus (fowl) - breeding flocks, unspecified	1,998	363,114	
	Gallus gallus (fowl) - broilers	1,100	7,442,663	85,500,000
	Gallus gallus (fowl) - laying hens	24,186	5,092,524	
Pigs	Pigs	5,561	1,366,359	2,456,672
Small ruminants	Goats	6,592	82,045	42,225
	Sheep	7,977	349,112	236,140
Solipeds, domestic	Solipeds, domestic	19,838	112,053	1,413
Turkeys	Turkeys - fattening flocks	393	80,993	

DISEASE STATUS TABLES

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

Region	Zoonotic agent	Number of herds with status officially free	Number of infected herds	Total number of herds
SWITZERLAND	Brucella	33,091	0	33,091

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

Region	Zoonotic agent	Number of herds with status officially free	Number of infected herds	Total number of herds
SWITZERLAND	Brucella	14,569	0	14,569

DISEASE STATUS TABLES

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

Region	Zoonotic agent	Number of herds with status officially free	Number of infected herds	Total number of herds
SWITZERLAND	Mycobacterium bovis	33,091	0	33,091

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 of 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	3	0	Brucella	0
	Camels - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	5	0	Brucella	0
	Llamas - farmed - 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
	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	16	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 of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	4	0	Campylobacter	0
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	4	0	Campylobacter	0
	Camels - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Canary - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological special tests	animal	490	15	Campylobacter coli	2
							Campylobacter jejuni	4
							Campylobacter, unspecified sp.	9
	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	294	143	Campylobacter jejuni	143
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological special tests	animal	68	5	Campylobacter coli	1
							Campylobacter jejuni	1
							Campylobacter, unspecified sp.	3
	Chinchillas - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological special tests	animal	978	42	Campylobacter coli	1
							Campylobacter jejuni	7
							Campylobacter upsaliensis	2
							Campylobacter, unspecified sp.	32
	Ferrets - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Geese - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	1	Campylobacter, unspecified sp.	1
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	11	0	Campylobacter	0
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	7	0	Campylobacter	0
	Hares - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Kangaroos - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	2	0	Campylobacter	0
	Oscine birds - 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	2	0	Campylobacter	0
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	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	289	191	Campylobacter coli	191
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	8	3	Campylobacter, unspecified sp.	3
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	12	0	Campylobacter	0
	Rats - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Reindeers - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	4	1	Campylobacter jejuni	1
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	5	0	Campylobacter	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	10	5	Campylobacter coli	1
							Campylobacter jejuni	1
							Campylobacter, unspecified sp.	3
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	85	0	Campylobacter	0
	Turtles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Campylobacter	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	117	9	Campylobacter jejuni	7
							Campylobacter, unspecified sp.	2

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 of 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	66	Campylobacter, unspecified sp.	66
			25	Gram	N_A	ISO 10272-2:2017 Campylobacter	545	147	Campylobacter coli	24
									Campylobacter jejuni	82
									Campylobacter, unspecified sp.	41
	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	21	6	Campylobacter, unspecified sp.	6
	Meat from broilers (Gallus gallus) - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	14	0	Campylobacter	0
		single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	7	0	Campylobacter	0
	Meat from broilers (Gallus gallus) - fresh - with skin - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	16	0	Campylobacter	0
	Meat from broilers (Gallus gallus) - fresh - with skin - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	28	0	Campylobacter	0
		single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	14	5	Campylobacter jejuni	4
									Campylobacter, unspecified sp.	1
	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	53	15	Campylobacter coli	2
									Campylobacter jejuni	5
									Campylobacter, unspecified sp.	8
	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 10272-1:2017 Campylobacter	13	0	Campylobacter	0
		single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	52	1	Campylobacter, unspecified sp.	1
	Meat from broilers (Gallus gallus) - meat products - cooked, 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	59	0	Campylobacter	0
	Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	7	0	Campylobacter	0
	Meat from turkey - carcase - chilled - Slaughterhouse - Switzerland - food sample - neck skin - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	100	15	Campylobacter coli	8
									Campylobacter jejuni	7
	Meat from turkey - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	14	0	Campylobacter	0

Table COXIELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sampling Details	Method	Total units tested	Total units positive	N of clinical affected herds	Zoonoses	N of units positive
SWITZERLAND	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Real-Time PCR (qualitative or quantitative)	2	0		Coxiella	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Staining	3277	56		Coxiella burnetii	56
	Deer - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Staining	1	0		Coxiella	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Real-Time PCR (qualitative or quantitative)	2	0		Coxiella	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Staining	159	18		Coxiella burnetii	18
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Staining	4	0		Coxiella	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Staining	223	15		Coxiella burnetii	15
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal	N_A	Staining	13	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 of units positive
SWITZERLAND	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Beavers - zoo animal - Zoo - 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	7	1	Echinococcus, unspecified sp.	1
	Cattle (bovine animals) - Slaughterhouse - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Echinococcus	0
	Coypu -wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	animal	1	1	Echinococcus multilocularis	1
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	42	14	Echinococcus multilocularis	14
	Dormice - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	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
	Foxes - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Hares - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	0
	Jackals - 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
	Lynx - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	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	2	2	Echinococcus multilocularis	2
							Echinococcus, unspecified sp.	2
	Pigs - Slaughterhouse - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	5	5	Echinococcus multilocularis	4
							Echinococcus, unspecified sp.	1
	Wild boars - 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
	Wild cat (Felis silvestris) - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Echinococcus	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 of units positive
SWITZERLAND	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	5	3	Echinococcus, unspecified sp.	3

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 of units positive
SWITZERLAND	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Detection method of microorganisms	animal	2	0	Francisella	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	5	1	Francisella tularensis	1
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Francisella	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Detection method of microorganisms	animal	1	0	Francisella	0
	Hares - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Detection method of microorganisms	animal	17	7	Francisella tularensis	7
	Hares - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Detection method of microorganisms	animal	3	1	Francisella tularensis	1
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	3	0	Francisella	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Detection method of microorganisms	animal	7	1	Francisella tularensis	1

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 of units positive
SWITZERLAND	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	4	0	Listeria	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	11	5	Listeria monocytogenes	5
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	8	0	Listeria	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	6	2	Listeria ivanovii	1
							Listeria monocytogenes	1
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Histology	animal	3	1	Listeria monocytogenes	1
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Listeria	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	29	0	Listeria	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	9	5	Listeria monocytogenes	5
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	7	1	Listeria monocytogenes	1
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	6	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 of units tested	N of 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	1705	2	detection	Listeria monocytogenes	1,705	2
							82	detection	Listeria spp., unspecified	1,705	82

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 of units positive
SWITZERLAND	Badgers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	2	0	Lyssavirus	0
	Bats - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	18	0	Lyssavirus	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	16	0	Lyssavirus	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	64	0	Lyssavirus	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	12	0	Lyssavirus	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Jackals - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	2	0	Lyssavirus	0
	Martens - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence method	animal	3	0	Lyssavirus	0
	Pigs - Unspecified - 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 of 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	Mycobacterium	0
	Alpine chamois - 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
	Buffalos - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	8	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	11	2	Mycobacterium microti	2
	Deer - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Mycobacterium	0
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Visual inspection	animal	81	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	2	0	Mycobacterium	0
	Llamas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Parrots - 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
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	0	Mycobacterium	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Wild boars - 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
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	23	0	Mycobacterium	0

Table Salmonella:SALMONELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	N of flocks under control programme	Target verification	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	11	0	Salmonella	0
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	7	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	516	15	Salmonella enterica, subsp. houtenae	1
									Salmonella Enteritidis	4
									Salmonella Infantis	1
									Salmonella spp., unspecified	7
									Salmonella Typhimurium, monophasic	2
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological special tests	1934	242	Salmonella enterica, subspecies diarizonae	1
									Salmonella enterica, subspecies enterica	14
									Salmonella spp., unspecified	227
	Chinchillas - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	2	0	Salmonella	0
	Deer - farmed - Unspecified - 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	985	43	Salmonella Ajiobo	1
									Salmonella Brandenburg	1
									Salmonella Derby	2
									Salmonella Enteritidis	5
									Salmonella Idikan	1
									Salmonella Infantis	5
									Salmonella Muenster	2
									Salmonella spp., unspecified	26
	Ducks - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	4	0	Salmonella	0
	Ferrets - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	3	0	Salmonella	0
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	4718	N	N_A	ISO 6579:2002 Salmonella	557	15	Salmonella Enteritidis	2
									Salmonella Infantis	1
									Salmonella Kottbus	1
									Salmonella Livingstone	1
									Salmonella Mbandaka	1
									Salmonella Tennessee	5
									Salmonella Typhimurium	1
									Salmonella Typhimurium, monophasic	1
									Salmonella Welikade	2
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	4718	Y	N_A	ISO 6579:2002 Salmonella	612	0	Salmonella	0
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock	4718	N	N_A	ISO 6579:2002 Salmonella	55	2	Salmonella 13,23:i:-	1
									Salmonella Typhimurium, monophasic	1
	Gallus gallus (fowl) - laying hens - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	937	Y	N_A	ISO 6579:2002 Salmonella	677	4	Salmonella Enteritidis	4
				N	N_A	ISO 6579:2002 Salmonella	677	17	Salmonella Abony	1
									Salmonella Coeln	1
									Salmonella enterica, subspecies enterica	1
									Salmonella Enteritidis	7
									Salmonella Jerusalem	3
									Salmonella Typhimurium	2

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	N of flocks under control programme	Target verification	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Gallus gallus (fowl) - laying hens - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	937	N	N_A	ISO 6579:2002 Salmonella	677	17	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	69	Y	N_A	ISO 6579:2002 Salmonella	59	0	Salmonella	0
	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	151	Y	N_A	ISO 6579:2002 Salmonella	63	0	Salmonella	0
	Geese - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	10	4	Salmonella enterica, subspecies enterica	2
									Salmonella I 4,12:-:-	1
									Salmonella Typhimurium, monophasic	1
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	122	9	Salmonella spp., unspecified	5
									Salmonella Typhimurium, monophasic	4
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	9	0	Salmonella	0
	Hares - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	2	0	Salmonella	0
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	4	2	Salmonella Enteritidis	2
	Kangaroos - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	2	0	Salmonella	0
	Mice - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Oscine birds - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	2	0	Salmonella	0
	Ostriches - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	3	0	Salmonella	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	4	0	Salmonella	0
	Peafowl - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	10	1	Salmonella Typhimurium, monophasic	1
	Pigeons - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	3	0	Salmonella	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Slide agglutination according White Kauffmann Le Minor Scheme	140	12	Salmonella Bredeney	1
									Salmonella enterica, subspecies enterica	1
									Salmonella spp., unspecified	7
									Salmonella Typhimurium, monophasic	3
	Quails - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	13	2	Salmonella Typhimurium, monophasic	2
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	49	0	Salmonella	0
	Rats - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	2	0	Salmonella	0
	Reindeers - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	1	0	Salmonella	0
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	23	17	Salmonella enterica, subspecies diarizonae	1
									Salmonella enterica, subspecies enterica	5
									Salmonella Kisarawe	1
									Salmonella Muenchen	1
									Salmonella spp., unspecified	4
									Salmonella Telelkebir	1
									Salmonella Tennessee	4
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological special tests	127	18	Salmonella enterica, subspecies diarizonae	12
									Salmonella enterica, subspecies enterica	1
									Salmonella spp., unspecified	4
									Salmonella Typhimurium	1

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	N of flocks under control programme	Target verification	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	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	2
									Salmonella Montevideo	1
									Salmonella spp., unspecified	1
	Solipeds, domestic - donkeys - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	6	1	Salmonella enterica, subspecies enterica	1
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	294	9	Salmonella Ajiobo	1
									Salmonella enterica, subspecies enterica	1
									Salmonella Enteritidis	3
									Salmonella spp., unspecified	2
									Salmonella Typhimurium	2
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	98	N	N_A	ISO 6579:2002 Salmonella	35	13	Salmonella Albany	11
									Salmonella Typhimurium	2
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	98	Y	N_A	ISO 6579:2002 Salmonella	38	0	Salmonella	0
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock	98	N	N_A	ISO 6579:2002 Salmonella	3	1	Salmonella Albany	1
	Turtles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	10	0	Salmonella	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	animal		N_A	N_A	Microbiological standard tests	267	42	Salmonella Abaetetuba	1
									Salmonella Blijdorp	1
									Salmonella Bongori	1
									Salmonella enterica, subspecies arizonae	1
									Salmonella enterica, subspecies diarizonae	16
									Salmonella enterica, subspecies enterica	7
									Salmonella Enteritidis	2
									Salmonella Glostrup	1
									Salmonella Montevideo	1
									Salmonella Muenchen	1
									Salmonella spp., unspecified	1
									Salmonella Telelkebir	7
									Salmonella Tennessee	2

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 of 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	1017	2	Salmonella Muenster	2
	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)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	845	13	Salmonella Agona	6
									Salmonella Infantis	2
									Salmonella Livingstone	1
									Salmonella Typhimurium, monophasic	3
									Salmonella Welikade	1
	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	95	3	Salmonella Typhimurium, monophasic	3
	Meat from broilers (Gallus gallus) - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	13	1	Salmonella 1,13,23:i:-	1
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	79	0	Salmonella	0
	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	81	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - with skin - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	30	0	Salmonella	0
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	54	1	Salmonella Typhimurium	1
	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	31	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	288	3	Salmonella Enteritidis	1
									Salmonella spp., unspecified	2
	Meat from broilers (Gallus gallus) - meat products - cooked, 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	141	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	7	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	260	5	Salmonella Agona	5
	Meat from broilers (Gallus gallus) - minced meat - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	160	0	Salmonella	0
	Meat from broilers (Gallus gallus) - minced meat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	4	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	1117	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)	200	Square centimetre	N_A	ISO 6579-1:2017 Salmonella	367	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	135	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	270	0	Salmonella	0

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Meat from turkey - meat preparation - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	160	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 of units positive
SWITZERLAND	Compound feedingstuffs for cattle - calves - final product - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	3	0	Salmonella	0
	Compound feedingstuffs for cattle - calves - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	136	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	1	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	18	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	69	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	12	0	Salmonella	0
	Compound feedingstuffs for sheep - final product - 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 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	2	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	8	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 cereal grain origin - wheat derived - Feed mill - European Union - 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 cereal grain origin - wheat derived - Feed mill - Switzerland - 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 land animal origin - dairy products - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	17	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	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - other oil seeds 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 - 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	24	3	Salmonella Livingstone	1
									Salmonella Mbandaka	1
									Salmonella Ouakam	1
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	11	1	Salmonella Ouakam	1
	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	6	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	20	1	Salmonella Tennessee	1
	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	2	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	27	0	Salmonella	0

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	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	12	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	4	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect 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 - Unknown - 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 - 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	6	0	Salmonella	0
	Feed material of oil seed or fruit origin - sunflower seed 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 - sunflower seed 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 - Switzerland - feed sample - Monitoring - Official sampling - Suspect 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 - Unknown - 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 - 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:STAPHYLOCOCCUS AUREUS METICILLIN RESISTANT (MRSA) 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	294	18	Methicillin resistant Staphylococcus aureus (MRSA)	398			17
													1
	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	289	155	Methicillin resistant Staphylococcus aureus (MRSA)	398			155

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 of units positive
SWITZERLAND	Alpine chamois - wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Beavers - wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Birds - wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Cats - pet animals - Veterinary activities - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	347	102	Toxoplasma gondii	102
	Cats - pet animals - Veterinary activities - Switzerland - animal sample - faeces - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	13	4	Toxoplasma gondii	4
	Cats - pet animals - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	5	2	Toxoplasma gondii	2
	Cattle (bovine animals) - Veterinary activities - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Cattle (bovine animals) - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Coypu -wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	1	Toxoplasma gondii	1
	Dogs - pet animals - Veterinary activities - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	74	22	Toxoplasma gondii	22
	Dogs - pet animals - Veterinary activities - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	7	1	Toxoplasma gondii	1
	Foxes - wild - Natural habitat - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	1	Toxoplasma gondii	1
	Foxes - wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	2	2	Toxoplasma gondii	2

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 of units positive
SWITZERLAND	Giraffes - zoo animal - Zoo - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Goats - Veterinary activities - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	4	1	Toxoplasma gondii	1
	Goats - Veterinary activities - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	4	0	Toxoplasma gondii	0
	Goats - Veterinary activities - Switzerland - animal sample - foetus/stillbirth - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	2	0	Toxoplasma gondii	0
	Hares - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	1	Toxoplasma gondii	1
	Lynx - wild - Natural habitat - Switzerland - animal sample - faeces - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	1	Toxoplasma gondii	1
	Martens - wild - Natural habitat - Switzerland - animal sample - organ/tissue - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	1	Toxoplasma gondii	1
	Mice - zoo animal - Zoo - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	2	0	Toxoplasma gondii	0
	Sheep - Veterinary activities - Switzerland - animal sample - blood - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	4	2	Toxoplasma gondii	2
	Sheep - Veterinary activities - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	5	0	Toxoplasma gondii	0
	Sheep - Veterinary activities - Switzerland - animal sample - foetus/stillbirth - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	2	0	Toxoplasma gondii	0
	Squirrels - wild - Natural habitat - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma gondii	0
	Steinbock - Zoo - Switzerland - animal sample - brain - Clinical investigations - Industry sampling - Suspect sampling	N_A	Immunofluorescence assay tests (IFA)	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 of 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	9	0	Trichinella	0
	Bears - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	animal	1	0	Trichinella	0
	Coypu -wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	animal	1	0	Trichinella	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	animal	1	0	Trichinella	0
	Jackals - wild - Natural habitat - 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	34	1	Trichinella britovi	1
	Pigs - breeding animals - not raised under controlled housing conditions - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	not raised under controlled housing conditions as requirements in Regulation (EU) No 216/2014 are not fully met	Magnetic stirrer method for pooled sample digestion	animal	29836	0	Trichinella	0
	Pigs - fattening pigs - not raised under controlled housing conditions - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	not raised under controlled housing conditions as requirements in Regulation (EU) No 216/2014 are not fully met	Magnetic stirrer method for pooled sample digestion	animal	2265215	0	Trichinella	0
	Solipeds, domestic - horses - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	1118	0	Trichinella	0
	Wild boars - wild - Hunting - Switzerland - animal sample - Unspecified - Not applicable - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	10741	1	Trichinella britovi	1
	Wild cat (Felis silvestris) - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Magnetic stirrer method for pooled sample digestion	animal	1	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	22	2	Trichinella britovi	2

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 of units positive
SWITZERLAND	Solipeds, domestic - donkeys - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	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	8	0	Flavivirus	0

Table Yersinia:YERSINIA 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 of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	5	0	Yersinia	0
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	4	0	Yersinia	0
	Camels - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Canary - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	448	0	Yersinia	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	39	0	Yersinia	0
	Chinchillas - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	2	0	Yersinia	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	855	17	Yersinia enterocolitica - biotype 3	1
							Yersinia, unspecified sp.	16
	Ferrets - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Geese - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	10	0	Yersinia	0
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	8	0	Yersinia	0
	Hares - Natural habitat - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Kangaroos - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	2	0	Yersinia	0
	Oscine birds - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	3	1	Yersinia pseudotuberculosis	1
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	11	0	Yersinia	0
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	12	0	Yersinia	0
	Rats - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Reindeers - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	0
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	5	0	Yersinia	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	8	0	Yersinia	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	83	1	Yersinia, unspecified sp.	1
	Turtles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Industry sampling - Suspect sampling	N_A	Microbiological standard tests	animal	1	0	Yersinia	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
Bacillus cereus	Other processed food products and prepared dishes - rice based dishes	1	3	0	0				
Campylobacter jejuni	Unknown					1	2	2	0
	Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked	1	2	0	0				
Campylobacter, unspecified sp.	Meat from duck	1	2	1	0				
Clostridium perfringens	Meat and meat products	1	35	0	0				
Escherichia coli	Tap water, including well water	2	27	1	0				
Mushroom toxins	Mushrooms	1	2	1	0				
Norovirus	Unknown					2	40	0	0
	Berries and small fruit	1	126	2	0				
Orthohepevirus A (former Hepatitis E virus)	Unknown					1	105	29	2
Salmonella	Mixed food	1	4	0	0				
	Unknown					2	7	0	0
Salmonella Ajiobo	Unknown					1	21	0	0
Salmonella Bovismorbificans	Unknown					1	20	0	0
Salmonella Braenderup	Melons (except watermelon)	1	18	0	0				
Salmonella Enteritidis	Eggs and egg products	1	28	2	0				
STEC, unspecified	Meat and meat products	1	2	0	0				
Unknown	Unknown					17	101	2	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
Bacillus cereus	unk	Not Available	Not Available	Not Available	N_A	General	Other processed food products and prepared dishes - rice based dishes	N_A	Product-tracing investigations ;Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	3	0	0
Campylobacter jejuni	unk	Not Available	Not Available	Not Available	N_A	General	Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked	Chicken nuggets	Product-tracing investigations ;Descriptive epidemiological evidence	School or kindergarten	Not Available	Not Available	Not Available	N_A	1	2	0	0
Campylobacter, unspecified sp.	unk	Not Available	Not Available	Not Available	N_A	General	Meat from duck	N_A	Product-tracing investigations ;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
Clostridium perfringens	unk	Not Available	Not Available	Not Available	N_A	General	Meat and meat products	Meat stew	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Temporary mass catering (fairs or festivals)	Not Available	Not Available	Not Available	N_A	1	35	0	0
Escherichia coli	unk	Not Available	Not Available	Enterococcus	N_A	General	Tap water, including well water	N_A	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Domestic premises	Not Available	Not Available	Not Available	N_A	1	10	1	0
										Residential institution (nursing home or prison or boarding school)	Not Available	Not Available	Not Available	N_A	1	17	0	0
Mushroom toxins	unk	Not Available	Not Available	Not Available	N_A	Household	Mushrooms	Morel pizza	Product-tracing investigations ;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

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
Norovirus	unk	Not Available	Not Available	Not Available	N_A	General	Berries and small fruit	N_A	Product-tracing investigations;Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Multiple places of exposure in one country	Not Available	Not Available	Not Available	N_A	1	126	2	0
Salmonella	unk	Not Available	Not Available	Not Available	N_A	General	Mixed food	Greek salad with chicken fillet	Descriptive environmental evidence;Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Canteen or workplace catering	Not Available	Not Available	Not Available	N_A	1	4	0	0
Salmonella Braenderup	unk	Not Available	Not Available	Not Available	N_A	Part of multicountry outbreak	Melons (except watermelon)	N_A	Product-tracing investigations;Descriptive epidemiological evidence	Multiple places of exposure in more than one country	Not Available	Not Available	Not Available	N_A	1	18	unk	0
Salmonella Enteritidis	unk	Not Available	Not Available	Not Available	N_A	General	Eggs and egg products	chocolate mousse	Product-tracing investigations;Descriptive epidemiological evidence	School or kindergarten	Not Available	Not Available	Not Available	N_A	1	28	2	0
STEC, unspecified	unk	Not Available	Not Available	Not Available	N_A	Unknown	Meat and meat products	Kebab	Product-tracing investigations;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	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 jejuni	unk	Not Available	Not Available	Not Available	N_A	Unknown	Unknown	N_A	Unknown	Others	Not Available	Not Available	Not Available	N_A	1	2	2	0
Norovirus	unk	Not Available	Not Available	Not Available	N_A	General	Unknown	N_A	Descriptive environmental evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	2	40	0	0
Orthohepevirus A (former Hepatitis E virus)	unk	Not Available	Not Available	Not Available	N_A	General	Unknown	N_A	Descriptive epidemiological evidence	Multiple places of exposure in one country	Not Available	Not Available	Not Available	N_A	1	105	29	2
Salmonella	unk	Not Available	Not Available	Enteroaggregative E. coli (EAEC);Enterotoxigenic E. coli (ETEC);Norovirus	N_A	Unknown	Unknown	N_A	Descriptive epidemiological evidence	Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	2	0	0
				Not Available	N_A	General	Unknown	N_A	Descriptive epidemiological evidence	School or kindergarten	Not Available	Not Available	Not Available	N_A	1	5	0	0
Salmonella Ajiobo	unk	Not Available	Not Available	Not Available	N_A	General	Unknown	N_A	Descriptive epidemiological evidence	Multiple places of exposure in one country	Not Available	Not Available	Not Available	N_A	1	21	unk	0
Salmonella Bovismorbificans	unk	Not Available	Not Available	Not Available	N_A	General	Unknown	N_A	Descriptive epidemiological evidence	Multiple places of exposure in one country	Not Available	Not Available	Not Available	N_A	1	20	unk	0
Unknown	unk	Not Available	Not Available	Not Available	N_A	General	Unknown	N_A	Descriptive epidemiological evidence	Canteen or workplace catering	Not Available	Not Available	Not Available	N_A	1	12	0	0
										Hospital or medical care facility	Not Available	Not Available	Not Available	N_A	1	19	0	0
										Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	2	7	1	0
										School or kindergarten	Not Available	Not Available	Not Available	N_A	2	37	0	0
						Household	Unknown	N_A	Descriptive environmental evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	2	0	0
									Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	2	0	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	unk	Not Available	Not Available	Not Available	N_A	Unknown	Unknown	N_A	Descriptive environmental evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	6	16	0	0
										Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	4	0	0
									Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	unk	0	0
										Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	2	1	0

ANTIMICROBIAL RESISTANCE TABLES FOR CAMPYLOBACTER

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

Sampling Stage: Slaughterhouse | Sampling Type: animal sample - caecum | Sampling Context: Monitoring - EFSA specifications

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

Analytical Method:

Country of Origin: Switzerland

Sampling details:

	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						
MIC	**N of resistant isolates**						
<=0.125			77	178			
<=0.25						12	
0.25			10	12			
<=0.5							57
0.5			1	1		64	
<=1					187		
1			1			109	5
<=2		110					
2			1		2	6	2
4		71	5		2		2
8		10	38				21
16			47				36
32			11				43
64							17
>64							8

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:

Country of Origin: Switzerland

Sampling details:

	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						
MIC	**N of resistant isolates**						
<=0.125			51	134			
<=0.25						38	
0.25			8	5			
<=0.5							76
0.5			1	2		91	
<=1					142		
1				1		14	1
<=2		134					
4		8	1		1		1
>4				1			
8		1	31				1
16			43				7
32			8				5
64							24
>64							28

ANTIMICROBIAL RESISTANCE TABLES FOR SALMONELLA

Table Antimicrobial susceptibility testing of Salmonella Abony 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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
0.064											1					
<=0.25					1										1	1
<=0.5										1						
0.5						1										
<=1			1													
<=2														1		
<=4		1										1				
4									1							
<=8							1									
8				1												
32													1			

Table Antimicrobial susceptibility testing of Salmonella Abony in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.03											1					
0.03								2								
0.064											1					
<=0.25					2	1									2	2
<=0.5										2						
0.5						1										
<=2														2		
2			2						1							
<=4		2										2				
4									1							
<=8							2						1			
8				2												
16													1			

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

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								12								
<=0.03											12					
<=0.25					11										3	10
<=0.5										12						
0.5					1	12									9	2
<=1									12							
<=2														12		
2			12													
<=4		12										12				
4				12												
<=8							12						5			
16													7			

Table Antimicrobial susceptibility testing of Salmonella Albany in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
<=0.03											1					
<=0.25					1										1	1
0.5						1										
<=1			1													
1										1						
<=2														1		
2									1							
<=4		1										1				
<=8							1									
8				1												
16													1			

Table Antimicrobial susceptibility testing of Salmonella Albany in Turkeys

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								15								
<=0.03											16					
0.03								1								
<=0.25					16	3									16	16
<=0.5										14						
0.5						13										
<=1			14						8							
1										2						
<=2														16		
2			2						8							
<=4		16										16				
4				14												
<=8							16						8			
8				2												
16													8			

Table Antimicrobial susceptibility testing of Salmonella Bredeney 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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
<=0.03											1					
<=0.25					1	1									1	1
1										1						
<=2														1		
2									1							
<=4		1										1				
4				1												
<=8							1									
>32			1													
>512													1			

Table Antimicrobial susceptibility testing of Salmonella Coeln 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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.03											1					
0.03								1								
<=0.25					1										1	1
<=0.5										1						
0.5						1										
<=1			1													
<=2														1		
2									1							
<=4		1										1				
<=8							1									
8				1												
16													1			

Table Antimicrobial susceptibility testing of Salmonella Coeln in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.03											1					
0.03								1								
<=0.25					1	1										1
<=0.5										1						
0.5															1	
<=1			1													
<=2														1		
2									1							
<=4		1										1				
<=8							1									
8				1												
16													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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								2								
<=0.03											8					
0.03								9								
0.064											3					
<=0.25					11	8									11	8
<=0.5										11						
0.5						3										3
<=1			5						3							
<=2				1										11		
2			6						8							
<=4		11										11				
4				6												
<=8							11						4			
8				4												
16													7			

Table Antimicrobial susceptibility testing of Salmonella Enteritidis in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								9								
<=0.03											19					
0.03								12								
0.064											2					
<=0.25					21	20									19	21
<=0.5										20						
0.5						1									2	
<=1			11						6							
1										1						
<=2														21		
2			9						13							
<=4		21										21				
4			1	16					2							
<=8							21						5			
8				5												
16													14			
32													2			

Table Antimicrobial susceptibility testing of Salmonella I, group O:13 in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.03											2					
0.03								2								
<=0.25					2											1
<=0.5										2						
0.5						2									2	1
<=1									2							
<=2														2		
2			2													
<=4		2										2				
<=8							2									
8				2												
128													2			

Table Antimicrobial susceptibility testing of Salmonella Infantis in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								4								
<=0.03											4					
0.03								1								
0.064											1					
<=0.25					5	3									4	5
<=0.5										4						
0.5						2									1	
<=1			3						2							
1										1						
<=2														5		
2			2						3							
<=4		5										5				
4				3												
<=8							5									
8				2												
16													3			
32													2			

Table Antimicrobial susceptibility testing of Salmonella Jerusalem in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								3								
<=0.03											3					
<=0.25					3	2									3	3
<=0.5										3						
0.5						1										
<=1			3						2							
<=2														3		
2									1							
<=4		3										3				
<=8							3									
8				3												
16													1			
32													2			

Table Antimicrobial susceptibility testing of Salmonella Kottbus 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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
0.064											1					
<=0.25					1	1									1	1
<=0.5										1						
<=1			1						1							
<=2														1		
<=4		1										1				
4				1												
<=8							1						1			

Table Antimicrobial susceptibility testing of Salmonella Kottbus in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
<=0.03											1					
<=0.25					1	1									1	1
<=0.5										1						
<=1			1													
<=2														1		
2									1							
<=4		1										1				
4				1												
<=8							1									
16													1			

Table Antimicrobial susceptibility testing of Salmonella Livingstone in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
<=0.03											1					
0.03								1								
0.064											1					
<=0.25					2	2									1	2
<=0.5										2						
0.5															1	
<=1			1						1							
<=2														2		
2			1						1							
<=4		2										2				
4				2												
<=8							2									
32													1			
64													1			

Table Antimicrobial susceptibility testing of Salmonella Martonos 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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
<=0.03											1					
<=0.25					1	1									1	1
<=0.5										1						
<=1			1													
<=2														1		
2									1							
<=4		1										1				
4				1												
<=8							1									
16													1			

Table Antimicrobial susceptibility testing of Salmonella Mbandaka in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
<=0.03											2					
0.03								1								
<=0.25					2										2	2
<=0.5										2						
0.5						2										
<=1			2						2							
<=2														2		
<=4		2										2				
<=8							2									
8				2												
32													2			

Table Antimicrobial susceptibility testing of Salmonella Napoli in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.03											1					
0.03								1								
<=0.25					1	1									1	1
<=0.5										1						
<=2														1		
2			1						1							
<=4		1										1				
<=8							1						1			
8				1												

Table Antimicrobial susceptibility testing of Salmonella Senftenberg in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.03											1					
<=0.25					1	1									1	
0.25								1								
<=0.5										1						
0.5																1
<=1			1													
<=2														1		
2									1							
<=4		1														
4				1												
<=8							1									
32													1			
>64												1				

Table Antimicrobial susceptibility testing of Salmonella Senftenberg in Turkeys

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.03											3					
0.064											1					
<=0.25					4	1									3	1
0.25								4								
<=0.5										3						
0.5						2									1	3
<=1			3						2							
1						1				1						
<=2														4		
2			1						2							
<=4		4														
4				4												
<=8							4						1			
16													1			
32													1			
64													1			
>64												4				

Table Antimicrobial susceptibility testing of Salmonella Tennessee in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								5								
<=0.03											5					
0.03								1								
0.064											1					
<=0.25					6	2									3	5
<=0.5										6						
0.5						4									3	1
<=1			5						1							
<=2														6		
2			1						5							
<=4		6										6				
4				1												
<=8							6						1			
8				4												
16				1									1			
32													2			
64													2			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Sheep

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								1								
0.064											1					
<=0.25					1	1									1	1
<=0.5										1						
<=1			1													
<=2														1		
<=4		1										1				
4				1					1							
<=8							1									
64													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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								13								
<=0.03											11					
0.03								7								
0.064											9					
<=0.25					20	16									13	19
<=0.5										19						
0.5						4									7	1
<=1			14						5							
1										1						
<=2														20		
2			6						14							
<=4		20										20				
4				17					1							
<=8							20						4			
8				3												
16													8			
32													8			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								6								
<=0.03											5					
0.03								4								
0.064											5					
<=0.25					10	10									8	10
<=0.5										10						
0.5															2	
<=1			9						3							
<=2														10		
2			1						6							
<=4		10										10				
4				9												
<=8							10						2			
8				1					1							
16													7			
32													1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Goats

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								2								
<=0.03											1					
0.064											1					
<=0.25					2	1									1	2
0.5						1									1	
<=2														2		
2									2							
<=4		2										2				
4				2												
<=8							2									
>16										2						
32													2			
>32			2													

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Turkeys

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								2								
<=0.03											1					
0.064											1					
<=0.25					2	2									1	2
<=0.5										2						
0.5															1	
<=1			1													
<=2														2		
2			1						2							
<=4		2										2				
4				2												
<=8							2						1			
16													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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								2								
<=0.03											5					
0.03								7								
0.064											6					
<=0.25					11	9									1	10
<=0.5										10						
0.5						2		1							8	1
<=1									2							
1								1		1					1	
2									8						1	
<=4	11											9				
4				7					1							
<=8							9									
8				2												
16				2			2									
>32			11											11		
>64												2				
>512													11			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								2								
0.03								3								
0.064											5					
<=0.25					5	5									3	5
<=0.5										4						
0.5															2	
<=1									2							
2									3							
<=4		4										4				
4				3						1						
<=8							5									
8				2								1				
16		1														
>32			5											5		
>512													5			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Goats

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
0.03								1								
0.064											1					
<=0.25					1	1										1
<=0.5										1						
0.5															1	
2									1							
<=4		1										1				
<=8							1									
8				1												
>32			1											1		
>512													1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic 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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								2								
<=0.03											1					
0.03								1								
0.064											2					
<=0.25					3	2									3	3
<=0.5										3						
0.5						1										
<=1									3							
<=4		3										3				
4				3												
<=8							3									
>32			3											3		
>512													3			

Table Antimicrobial susceptibility testing of Salmonella Welikade in Gallus gallus (fowl)

Sampling Stage: Unspecified

Sampling Type: unknown

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**4**	**8**	**16**	**0.5**	**2**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**256**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								3								
0.064											3					
<=0.25					3	2									3	1
<=0.5										3						
0.5						1										2
<=1			2													
<=2														3		
2			1						1							
<=4		3										3				
4				1					2							
<=8							3									
8				2												
32													2			
64													1			

ANTIMICROBIAL RESISTANCE TABLES FOR INDICATOR 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:

Country of Origin: Switzerland

Sampling Details:

			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										
Ceftazidime synergy test	Cefotaxime synergy test	MIC	N of resistant isolates										
Not Available	Not Available	<=0.015								2			
		<=0.03										2	
		<=0.125									1		
		0.125		1									
		0.25									1		
		2			1								
		4		1			1	1					1
		8											1
		16					1	1					
		64			1								
	Positive/Present	<=0.064				1							
	Negative/Absent	1				1							
Positive/Present	Not Available	0.25							1				
Negative/Absent	Not Available	2							1				

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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								169								
<=0.03											180					
0.03								10								
<=0.25					178	171									168	111
0.25								1								
<=0.5										150						
0.5						7									6	47
<=1			4						176							
1										18					5	
<=2				37										126		
2			45		1				4						1	
<=4		178										179				
4			76	100		1								3		
>4					1											
<=8							165						103			
8		2	8	39		1				1						
16			2	2			2			2			22			
>16										9						22
32							1						6			
>32			45											51		
64				2			1									
>64							11					1				
512													1			
>512													48			

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:

Country of Origin: Switzerland

Sampling Details:

Ceftazidime synergy test	Cefotaxime synergy test	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										
			N of resistant isolates										
Not Available	Not Available	<=0.015								50			
		<=0.03										70	
		0.03								15			
		<=0.064		5									
		0.064								5			
		<=0.125									27		
		0.125		15									
		0.25		4							38		
		0.5		1	1			3			5		
		1		2	5			12					
		2		8	8		9	6					
		4		20	13		23	21					24
		8		10	1		14	18					40
		16		5	11		8	10					6
		32			17		3						
		64			11		12						
		>64			3		1						
	Positive/Present	<=0.064				37							
		0.125				9							
	Negative/Absent	0.25				1							
		0.5				2							

		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										
Ceftazidime synergy test	**Cefotaxime synergy test**	**MIC**	**N of resistant isolates**									
Not Available	Negative/Absent	1			9							
		2			12							
Positive/Present	Not Available	<=0.125						19				
		0.25						20				
Negative/Absent	Not Available	<=0.125						3				
		0.25						4				
		0.5						1				
		2						7				
		4						13				
		8						3				

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:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								34								
<=0.03											70					
0.03								1								
0.125								7								
<=0.25															63	15
0.25								13								
<=0.5										40						
0.5					1	3		5							6	20
<=1									69							
1					6	11				6					1	2
<=2				6										13		
2					15	11			1	1						
<=4	69											47				
4				31	5	23				1						
>4					43											
<=8							30						10			
8	1			25		17		4		3		8				
>8						5		6								
16				3						3		2	4			
>16										16						33
32				1										4		
>32			70											53		
64				4			1					1	1			
>64							39					12				
>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: AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
N of tested isolates															
N of resistant isolates															
MIC															
<=0.015							156								
<=0.03										170					
0.03							6								
0.064							1								
0.125							2								
<=0.25				170	168									156	114
0.25							4								
<=0.5									150						
0.5					2									13	31
<=1		12						169							
1									18					1	
<=2			39										119		
2		70						1							
<=4	167										163				
4		57	103												
<=8						163						94			
8	3	3	28								1				
>8							1								
16						2			1			23	1		
>16									1						25
32						1						3	6		
>32		28											44		
64						1					2				
>64						3					4				
>512												50			

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:

Country of Origin: Switzerland

Sampling Details:

Ceftazidime synergy test	Cefotaxime synergy test	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										
			N of resistant isolates										
Not Available	Not Available	<=0.015								14			
		<=0.03										17	
		0.03								2			
		<=0.064		2									
		0.064								1			
		<=0.125									6		
		0.125		2									
		0.25		3							11		
		0.5						1					
		1			3			5					
		2		2	3		2	4					
		4		4			9	3					9
		8		4	1		1	1					8
		16			5		2	3					
		32			4		1						
		64			1		2						
	Positive/Present	<=0.064				12							
	Negative/Absent	0.5				1							
		1				3							
		4				1							

		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										
Ceftazidime synergy test	**Cefotaxime synergy test**	**MIC**	**N of resistant isolates**									
Positive/Present	Not Available	<=0.125						8				
		0.25						2				
Negative/Absent	Not Available	<=0.125						1				
		0.25						1				
		1						2				
		2						1				
		4						1				
		8						1				

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

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

	AM substance	Amikacin	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	**8**	**8**	**16**	**0.25**	**0.5**	**16**	**0.064**	**2**	**2**	**0.125**	**8**	**64**	**8**	**0.5**	**2**
	Lowest limit	**4**	**1**	**2**	**0.25**	**0.25**	**8**	**0.015**	**1**	**0.5**	**0.03**	**4**	**8**	**2**	**0.25**	**0.25**
	Highest limit	**128**	**32**	**64**	**4**	**8**	**64**	**8**	**16**	**16**	**16**	**64**	**512**	**32**	**8**	**16**
	N of tested isolates															
MIC	**N of resistant isolates**															
<=0.015								13								
<=0.03											17					
<=0.25															15	7
0.25								2								
<=0.5										13						
0.5						1		2							1	
<=1									16							
1					3	3				2					1	
<=2				1										8		
2					3	6			1							
<=4		17										14				
4				8	1	2										
>4					10											
<=8							16						5			
8				8		4				1		3				
>8						1										
>16										1						10
>32			17											9		
>64							1									
>512													12			

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:

Country Of Origin:Switzerland

Sampling Details:

AM Substance	ECOFF	Lowest limit	Highest limit	MIC	Spa T.	C.C.	
Cefoxitin	4	0.5	16	8		398	8
				16		398	10
Chloramphenicol	16	4	64	<=4		398	1
				8		398	12
				32		398	1
				64		398	3
				>64		398	1
Ciprofloxacin	1	0.25	8	<=0.25		398	8
				2		398	5
				8		398	1
				>8		398	4
Clindamycin	0.25	0.125	4	<=0.125		398	7
				>4		398	11
Erythromycin	1	0.25	8	<=0.25		398	4
				0.5		398	4
				>8		398	10
Fusidic acid	0.5	0.25	4	<=0.25		398	15
				0.5		398	3
Gentamicin	2	0.5	16	<=0.5		398	16
				>16		398	2
Kanamycin	8	4	32	<=4		398	16

AM Substance	ECOFF	Lowest limit	Highest limit	MIC	Spa T.	C.C.	
Kanamycin	8	4	32	>32		398	2
Linezolid	4	1	8	<=1		398	4
				2		398	14
Mupirocin	1	0.5	256	<=0.5		398	18
Penicillin	0.12	0.064	1	>1		398	18
Quinupristin/Dalfopristin	1	0.5	4	<=0.5		398	10
				1		398	3
				2		398	4
				4		398	1
Rifampicin	0.03	0.016	0.5	<=0.016		398	18
Streptomycin	16	4	32	<=4		398	6
				8		398	2
				16		398	1
				>32		398	9
Sulfamethoxazole	128	64	512	<=64		398	18
Tetracycline	1	0.5	16	>16		398	18
Tiamulin	2	0.5	4	<=0.5		398	15
				1		398	1
				>4		398	2
Trimethoprim	2	1	16	<=1		398	15
				>16		398	3
Vancomycin	2	1	8	<=1		398	18

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:

Country Of Origin:Switzerland

Sampling Details:

AM Substance	ECOFF	Lowest limit	Highest limit	MIC	Spa T.	C.C.	
Cefoxitin	4	0.5	16	8		398	53
				16		398	98
				>16		398	4
Chloramphenicol	16	4	64	<=4		398	11
				8		398	125
				64		398	19
Ciprofloxacin	1	0.25	8	<=0.25		398	64
				0.5		398	39
				1		398	3
				2		398	1
				4		398	3
				8		398	17
				>8		398	28
Clindamycin	0.25	0.125	4	<=0.125		398	84
				0.25		398	4
				2		398	1
				4		398	7
				>4		398	59
Erythromycin	1	0.25	8	<=0.25		398	41
				0.5		398	68
				>8		398	46
Fusidic acid	0.5	0.25	4	<=0.25		398	139
				0.5		398	16
Gentamicin	2	0.5	16	<=0.5		398	136

AM Substance	ECOFF	Lowest limit	Highest limit	MIC	Spa T.	C.C.	
Gentamicin	2	0.5	16	1		398	3
				8		398	2
				16		398	3
				>16		398	11
Kanamycin	8	4	32	<=4		398	137
				8		398	2
				>32		398	16
Linezolid	4	1	8	<=1		398	4
				2		398	151
Mupirocin	1	0.5	256	<=0.5		398	155
Penicillin	0.12	0.064	1	0.5		398	1
				>1		398	154
Quinupristin/Dalfopristin	1	0.5	4	<=0.5		398	71
				1		398	18
				2		398	11
				4		398	50
				>4		398	5
Rifampicin	0.03	0.016	0.5	<=0.016		398	154
				0.03		398	1
Streptomycin	16	4	32	<=4		398	51
				8		398	63
				16		398	2
				32		398	1
				>32		398	38
Sulfamethoxazole	128	64	512	<=64		398	152
				128		398	3
Tetracycline	1	0.5	16	<=0.5		398	3
				16		398	1
				>16		398	151
Tiamulin	2	0.5	4	<=0.5		398	73
				1		398	11
				2		398	4
				4		398	1
				>4		398	66
Trimethoprim	2	1	16	<=1		398	81
				>16		398	74
Vancomycin	2	1	8	<=1		398	155

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	294	0
	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	9	0
										Austria	N_A	1	0
										Brazil	N_A	1	0
										France	N_A	2	0
										Germany	N_A	1	0
										Hungary	N_A	1	0
										Ireland	N_A	8	0
										Latvia	N_A	2	0
										Paraguay	N_A	2	0
										Switzerland	N_A	266	0
										United States	N_A	1	0
										Uruguay	N_A	13	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	307	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	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	288	0
ESBL 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	9	0
										Austria	N_A	1	0
										Brazil	N_A	1	0
										France	N_A	2	0
										Germany	N_A	1	0
										Hungary	N_A	1	0
										Ireland	N_A	8	0
										Latvia	N_A	2	0
										Paraguay	N_A	2	0
										Switzerland	N_A	573	0
										United States	N_A	1	0
										Uruguay	N_A	13	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

Latest Transmission set

Table Name	Last submitted dataset transmission date
Antimicrobial Resistance	26-Jul-2022
Esbl	26-Jul-2022
Animal Population	26-Jul-2022
Disease Status	26-Jul-2022
Food Borne Outbreaks	04-Aug-2022
Prevalence	26-Jul-2022

ZOONOSES MONITORING

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 2021

Table of contents

1. Institutions and Laboratories involved in zoonoses monitoring and reporting

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, Yersiniosis, Tularemia, Coxiellosis, Antimicrobial Resistance
2. Institute for Food Safety and Hygiene (ILS), Vetsuisse Faculty University of Zurich, National Reference Laboratory for STEC, enteropathogenic bacteria
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

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 2021 (data status May 2022). Number of animals slaughtered in 2021.
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 2021: holdings with poultry and goats).
Poultry industry: the number of holdings with laying hens increased by 13.5% and the one with broilers by 3.5%. 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 is the same as last year (44), 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 2021: 46 cattle, 246 pigs, 44 sheep, 12 goats, 211 laying hens and 6766 broilers.

2.5. Additional information

Hatching eggs for the meat production line are imported on a large scale to Switzerland. In 2021, the number of imported fertilized eggs of the broiler type increased by 2.3 % to 37 million and the imported fertilized eggs of the fattening turkey type decreased by 9.3 % to 458866 hatching eggs.
Day-old-chicks are imported to Switzerland mainly from the breeding type (egg production line and meat production line are not differentiated). In total, 347201 day-old-chicks of the breeding type were imported in 2021. Compared to 2020, the import of day-old-chicks of the breeding type decreased by 19.4%. There are a few imports of day-old chicks of laying hens, which increased to 58100 in 2021 (instead of 35500 in 2020). As in 2020, 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 rare 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 (*B. melitensis*, TSV, Articles 190-195), in cattle (*B. abortus*, TSV, Articles 150-157), in pigs (*B. suis* as well as *B. abortus* and *B. melitensis*, 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 3.2.1.5 of the OIE International Animal Health Code are fulfilled since 1963.

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

In 2021, 6 brucellosis cases in humans were reported (2020: 3 cases). In 1 case *B. melitensis* was identified. The majority of those affected were male, as 4 of the 6 cases were men aged between 37 and 81 years. In the last 10 years, the notified cases ranged from 1 to 14 cases per year.
In 2021, no cases of zoonotic brucellosis in animals were reported by the cantonal veterinarians. In the annual national survey of 2021, 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*

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 3.2.1.5 of the OIE 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 2021, no cases of *Brucella abortus* 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*

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 2021, a randomized sample of 514 sheep farms (7710 blood samples) and 214 goat farms (1757 blood samples) tested negative for *Brucella melitensis* using serological tests.
In addition, no cases of *Brucella melitensis* in sheep and goats were reported to the FSVO by cantonal veterinarians in 2021.
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.
In animals, tuberculosis is notifiable (TSV, Article 3: disease to be eradicated and 158 – 159). Vaccination is prohibited. Requirements of section 3.2.3.10 of the OIE 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 2021, 4 human cases were reported in which the consumption of raw milk can be assumed to be the origin of infection (4x *M. bovis, 0x M. caprae*). *M. bovis* and *M. caprae* are reported on a low scale (not more than 17 cases per year since 2005). One of the four cases was Swiss and the remaining three cases were from abroad and over 50 years of age. 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 2021, no tuberculosis outbreaks in animals were reported to the FSVO by the cantonal veterinarians. Tuberculosis cases in animals are reported extremely rarely (not more than 2 cases per year). 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 2021 two cats tested positive for *M. microti. M. microti* is rarely found in Switzerland, mainly in cats and camelids. Information on the amount of animals tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.
At slaughterhouses, 8 lymphatic tissue and organ material of cattle suspicious for bovine TB were taken during meat inspection in 2021. All samples tested negative by real-time PCR and culture. Within the framework of the LyMON monitoring program in 2021, lymphatic tissue with unspecific alterations of 130 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 200 wild animals (mainly red deer) were investigated in 2021. There was no evidence of tuberculosis infections in wildlife in 2021.
As almost every year, a few cultures revealed growth of non-tuberculous mycobacteria (such as *M. vaccae, M. nonchromogenicum, M. diernhoferi, M. avium* ssp. *hominissuis*), 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

* **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

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 2021, 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 6'196 in 2020 to 6'793 confirmed cases in 2021, almost reaching the case numbers before the start of the Covid-19 pandemic. Slightly more men (56%) than women (44%) were affected. In accordance with previous years, most cases were caused by *C. jejuni* (66% of all cases, in 25% of cases no distinction was made between *C. jejuni* and *C. coli*). In 2021, the typical summer peak occurred in the months of July and August accounting for 1'857 cases.
96 cases of campylobacteriosis were reported in animals to the FSVO by cantonal veterinarians in 2021. The number of reports decreased steadily in 2020 and 2021. As usual, dogs, cattle and cats were affected mainly.
Healthy broilers are often carriers of *Campylobacter jejuni* and carcasses might become contaminated during slaughter. The occurrence of this pathogen in broiler chicken farms is studied as part of the antimicrobial resistance monitoring program. Broilers are sampled every second year (since the year 2015) by collecting caecal samples at the slaughterhouse level. In the years, when broilers are not tested, pigs are tested for *Campylobacter* by examining caecal samples. Since 2021, also calves are monitored in addition to the pigs. In 2021, 191 of 289 slaughter pigs (66%) were *Campylobacter*-positive (191x *C. coli)*. Thus, the prevalence stayed at the same level as in 2019. Compared to the year 2017 (57%) the percentage of positive samples increased slightly. In addition, 143 of 294 calves (49%) were *Campylobacter*-positive (143x *C. jejuni)*. As 2021 was the first time that calves were tested, there are no data from previous years for comparison. In pigs, mainly *C. coli* are detected and in calves mainly *C. jejuni*.
There are no poultry data for 2021. In 2020, 30% of the poultry flocks were *Campylobacter*-positive. The situation is unchanged since many years. The number of positive samples ranges between 28% and 38% each year. 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 Years Eve to increased consumption of meat dishes such as "Fondue Chinoise" (with resulting cross-contaminations) and travelling abroad.

8.3. 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

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 92% 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. No random sample of broiler meat was investigated at retail in the framework of the antimicrobial resistance monitoring program in 2021.

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 1'203 examinations including samples from broiler and turkey meat (carcasses and meat) were performed in 2021. Of them, 255 (21.2%) proved to be positive for *Campylobacter* spp. (2020: 22.2%): 98x *C. jejuni* (38.4%), 34x *C. coli* (13.3%), and 123x unspecified (48.2%), see also *Campylobacter* poultry meat table.

Of all 1'089 broiler meat samples (carcasses and meat), 240 (22.0%) proved to be positive for *Campylobacter* Thereby, 213 (26.5%) of the 805 tested broiler carcass samples and 27 (9.5%) of the 284 tested broiler meat samples were positive for *Campylobacter*. Moreover, 15 (13.2%) of all 114 turkey meat samples (carcasses and meat) proved to be positive for *Campylobacter*. Thereby, 15 (15.0%) of the 100 tested turkey carcass samples were positive, whereas *Campylobacter* were not found among the 14 tested turkey meat samples.

In order to verify the correct implementation of the process hygiene criterion for *Campylobacter* on broiler carcasses by the food business operators, the 805 samples from broiler carcasses were analyzed quantitatively for *Campylobacter* in 2021. Overall, 77 (9.6%) of the 805 tested samples from broiler carcasses exceeded 1'000 CFU/g. In addition, 136 (16.9%) of the 805 tested samples from broiler carcasses showed *Campylobacter* counts above the detection limit but counts were ≤1'000 CFU/g. Of all 213 *Campylobacter*-positive samples (below and above 1’000 CFU/g), 50 samples showed counts in the range from >detection limit to ≤100 CFU/g, 86 samples were in the range from >100 to ≤1'000 CFU/g, 65 samples were in the range from >1'000 to ≤10'000 CFU/g and 12 samples exceeded 10'000 CFU/g.

Considering the *Campylobacter* species, the *Campylobacter* counts were distributed as follows: *Campylobacter jejuni*-positive (82 samples) - 21 samples in the range from >detection limit to ≤100 CFU/g, 30 samples in the range from >100 to ≤1'000 CFU/g, 28 samples in the range from >1'000 to ≤10'000 CFU/g and 3 samples exceeded 10'000 CFU/g; *Campylobacter coli*-positive (24 samples) - 9 samples in the range from >detection limit to ≤100 CFU/g, 9 samples in the range from >100 to ≤1'000 CFU/g, 5 samples in the range from >1'000 to ≤10'000 CFU/g and 1 sample exceeded 10'000 CFU/g; *Campylobacter*-positive (without typing, 107 samples) - 20 samples in the range from >detection limit to ≤100 CFU/g, 47 samples in the range of >100 to ≤1'000 CFU/g, 32 samples in the range of >1'000 to ≤10'000 CFU/g and 8 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 herds 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 *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 the space of 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 *Coxiella burnetii* in small ruminants was determined in a study in 2017 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 2021, 111 human cases were reported with a notification rate of 1.3 per 100'000 inhabitants. Compared to the previous year, the number of cases doubled. An outbreak as an explanation for the significant increase in cases could not be detected. Cases occurred throughout Switzerland, but with an emphasis on eastern Switzerland, and spread throughout the year. Predominantly men (60%) of adult age were affected.
In 2021, 160 cases of coxiellosis, mainly in ruminants, were reported to the FSVO by cantonal veterinarians. Since 2019 the number of notifications in animals has risen steadily. As usual, mainly cases in cattle (82%) were reported. In sheep and goats underreporting is estimated to be higher than in cattle.
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.
Coxiella 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. Only since 2020, cases with non-generalized infections by few cysticerci are documented also.
In 2021, cases of generalized cysticercosis of the musculature were detected in 27 cattle (*T. saginata*) and in 3 sheep (species not identified). The year before, there were 15 and 3 cases, respectively.
Weak or non-generalized infections (Taenia spp., without species identification) were detected in 1'002 cattle, 32 sheep, and 1 goat in 2021 (2020: 1'058 cattle and 14 sheep).

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

None.

11.4. 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

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) rose since 2008 from 0.32 to 1.04 cases per 100'000 inhabitants in 2020 (hospital-based data). However, the hospitalization rate should not be considered equal to the diagnosis rate. Albeit the increased risk of infection human cases of AE are rare.
In 2021, 10 cases in animals were reported to the FSVO by cantonal veterinarians in 7 dogs, 2 monkeys and 1 golden Jackal. The reported cases were within the range of previous years. 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 559 hunted foxes from the Zurich region in a small surveillance study since 2016. All in all, 43% were positive for *E. multilocularis* (range: 20% – 93%). 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.

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.

*** 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

213 cases of tularemia were registered at the Federal Office of Public Health in 2021. The notification rate was 2.4 cases per 100'000 inhabitants. Compared to the previous year, the number of cases nearly doubled. With this rise in case numbers the generally increasing trend in tularemia case numbers continues. 143 cases were men and 70 women, aged between 12 and 82 years old.
The case numbers were higher than expected in the canton of Zurich, Aargau, Bern, Solothurn, Aargau and St. Gallen compared to the overall Swiss incidence. Tick bite was the most frequent single 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 2021, 10 cases in animals were reported to the FSVO by cantonal veterinarians: 8 in hares and one each in a monkey and in a cat. This is comparable to the recent years. There was an increase in reported numbers in 2018 probably due to much more tested hares rather than an increase in the positivity rate. Laboratory data showed, that the positivity rate in 2019 and 2020 (46%) was even higher than in 2018 (38%). In 2021 the positivity rate was 40% (8 of 20 hares tested positive).
In 2021, *Francisella tularensis subsp. holarctica* was detected in Switzerland in a cat, as in 2019 (see case report 2019). This is a very rare event. 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 2021 and 2020, no monitoring in ticks was conducted. In 2019, between April and August ticks were collected in a specific area in the canton of Bern. The ticks were homogenized in pools and analyzed by PCR. Two samples were positive for *F. tularensis subsp. holarctica*. 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). Analysis of this project are still ongoing and results should be available in autumn 2022.

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

None.

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

Switzerland

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 2021, 33 human cases were reported (notification rate: 0.4 per 100'000 inhabitants). Thus, the number of notifications was within the range of normal annual fluctuations. Persons over 65 years of age remained the most affected age group and more men (73%) than women (27%) were reported.
In 2021, 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 (53%), goats (18 %) and sheep (18%). 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.
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), 1'705 samples (environmental and cheese samples) were tested for the presence of *Listeria* spp. In 2021, *Listeria monocytogenes* were detected 2 times (0.1%), once in the rind of goat cheese and once in smear water. Other species of *Listeria* were found in 82 samples (4.8%).

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 2021, 1'487 human cases were reported representing a notification rate of 17 cases per 100'000 inhabitants (2020: 1'260 cases or 15/100'000), which is an increase, almost reaching the case numbers before the start of the Covid-19 pandemic. 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 2021. The most frequently reported serovars remained *S.* Enteritidis (37%), *S.* Typhimurium (14%) and monophasic *S.* Typhimurium (1,4,[5],12,i:-) (10%).
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. 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

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 2021, 127 salmonellosis cases in animals were reported to the FSVO by cantonal veterinarians. After a decline in reported numbers since 2017 (the number of reports were below 100 cases per year), the peak of reported cases from 2016 (127 cases) was reached again in 2021. As usual mainly cows, reptiles and dogs/cats were affected.
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.

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 must 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 2021, 4 cases were reported in the framework of the control program in laying hens (4x *S.* Enteritidis). Further 16 suspect cases (positive environmental samples not confirmed in animal samples) were detected:
9 in laying hens >1'000 places (*S.* Enteritidis (5x), *S.* Typhimurium (2x), monophasic *S.* Typhimurium (1,4,[5],12,i:-)) (2x))
5 in broilers > 333m^2 floor space (*S.* Enteritidis (2x), *S.* Typhimurium (1x), monophasic *S.* Typhimurium (1,4,[5],12,i:-)) (2x))
2 in turkeys *(S.* Typhimurium (2x), one was a double infection with *S.* Albany)
In addition, several serovars not covered in the control program were detected in environmental samples. Outside from the control program, 3 smaller flocks were tested positive: 2 in small laying hens (*S.* Typhimurium (1x), *S.* Enteritidis (1x)) and one in broilers (*S.* Typhimurium (1x)). Furthermore, there were 3 suspect cases in small laying hen flocks (*S.* Typhimurium (2x), *S.* Enteritidis (1x, a double infection with S. Mbandaka)) in 2021.
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 2021 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.
[2] From January 2020 until May 2021 an outbreak with S. Jerusalem was detected in Switzerland concerning 9 poultry holdings in 8 different cantons. All strains showed a very close relationship to a strain isolated in feed for poultry. Thus, contaminated feed was the most likely cause of this outbreak, showing the necessity of the heat-treated for feedstuff. More details can be found in the publication (Horlbog, J., et al. (2021). Feedborne *Salmonella enterica* serovar Jerusalem outbreak in different organic poultry flocks in Switzerland and Italy linked to soya expeller. Microorganisms)

*** 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).

Switzerland

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 92% 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 2'668 examinations including samples from broiler and turkey meat (carcasses and meat) were performed in 2021. Of them, 26 (1.0%) proved to be positive for *Salmonella* spp. (2020: 1,3%).
The *Salmonella*-positive samples comprised: 11x *S.* Agona, 6x monophasic *S.* Typhimurium (1,4,[5],12,i:-), 2x *S.* Infantis, 1x *Salmonella* 13,23 : i : - (monophasic), 1x *S.* Enteritidis, 1x *S.* Linvingstone, 1x *S.* Typhimurium and 1x *S.* Welikade, whereas 2 isolates were not serotyped. *S.* Agona originated from broiler carcasses (6x; slaughterhouse) and mechanically separated broiler meat (5x; cutting plant). Monophasic *S.* Typhimurium were found on broiler carcasses (3x; slaughterhouse) and in fresh broiler meat without skin (3x; cutting plant). *S.* Infantis (2x), *S.* Livingstone (1x), and *S.* Welikade (1x) originated from broiler carcasses (slaughterhouse). *Salmonella* 13,23 : i : -were found in fresh broiler meat without skin (1x; processing plant), while *S.* Enteritidis (1x) originated from a broiler meat preparation (processing plant) and *S.* Typhimurium (1x) from fresh broiler meat with skin (processing plant).
Of all 2'103 broiler meat samples (carcasses and meat), 26 (1.2%) proved to be positive for *Salmonella*. Thereby, 13 of the 845 tested broiler carcass samples and 13 of the 1'258 tested broiler meat samples were positive for *Salmonella*. Furthermore, none (0%) of the 565 turkey meat samples (135 samples from turkey carcasses and 430 samples from turkey 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 OIE and WHO (no cases for at least two years) the territory of Switzerland is considered to be free of rabies. In 2021, no cases of rabies were registered in Switzerland in humans or in animals. 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 countries were reported in the past.
In 2021, 874 sera from humans were tested for neutralizing antibodies at the national reference laboratory for rabies (Swiss Rabies Center). 538 times (62%) antibody titers were controlled after pre-expositional immunization, 302 times (35%) the blood was checked after post exposure prophylaxis (PEP) and in 14 cases no reason for the investigation was given. This amount of testing is still lower than in the years before the beginning of the Corona pandemic. There is a slight increase of test activity in 2021 compared to 2020.
Vaccination of dogs is recommended (and common) 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. 1731 sera of dogs and cats were tested in the context of travelling procedures in order to detect the level of neutralizing antibodies. Also here the test activity was higher in 2021 compared to 2020, but still lower than before the beginning of the Corona pandemic.
Regularly dogs and cats are illegally imported from rabies risk countries. In Switzerland, 44 dogs and 11 cats were detected in 2021. None of these 55 animals were rabies cases. In total, 119 animals were tested for rabies at the national reference laboratory (Swiss Rabies Center) in 2021. The samples originated mainly from dogs (54%), cats (14%), bats (15%) and foxes (10%). All tests were negative.
Illegally imported animals pose a certain risk for pets and their owners in the EU and Switzerland and lead to timely investigations, euthanisation of contact animals, post exposure prophylaxis (PEP) and prophylactic vaccinations.
Rabies in bats in Switzerland is a very rare event. In the last 40 years 4 bats were tested positive for rabies. Thus, bat rabies remains a source, albeit little, of infection for animals and humans in Switzerland.

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 Center http://www.ivv.unibe.ch/Swiss_Rabies_Center/swiss_rabies_center.html. 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 immunfluorescence (FAT) and virus isolation using murine neuroblastoma cell culture (RTCIT) is used and the rabies antibody detection is carried out using the rapid fluorescent focus inhibition test (RFFIT) as described in the OIE manual, see http://www.oie.int/eng/normes/mmanual/a_00044.htm.
[2] Swiss Rabies Center: http://www.ivv.unibe.ch/content/diagnostics/swiss_rabies_center/_
[3] http://www.who-rabies-bulletin.org/ Queries/
[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 2021, 16 cases in animals (6 in cats, 3 in foxes, 2 in sheep and 1 each in a dog, a lynx, a weasel, a degu and a chipmunk) 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. The reported cases were slightly higher than in previous years. In the past ten years never more than 7 cases per year were recorded. Affected animals were mainly cats (30%), goats (15%) and sheep (15%). 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 in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes. 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 *E. multilocularis* eggs and 18 *T. gondii* oocysts. In a field study, helminth DNA was detected in 14 of 157 lettuce samples including *Hydatigenia 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.
[3] Master thesis of Fabienne Holenweger, 2020, at the Institute of Parasitology Bern: *Toxoplasma gondii* and *Neospora caninum* infections in sheep and goats in Switzerland. (not yet published)
[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.
[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%.
[5] Bassi, A.M.G., et al. (2021). Seroprevalence of *Toxoplasma gondii* and *Salmonella* in hunted wild boars from two different regions in Switzerland. Animals.

* **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 2021, no human cases 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 2021, 2'295'051 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, 1'118 horses and 10'741 wild boars were also tested for trichinellosis in 2021. All results from horses were negative. Sine many years it was the first time that one wild boar tested positive for *Trichinella* (*Trichinella britovi*). So far, only antibodies against *Trichinella* were found in a few wild boars in a research study, showing that wild boars can have contact to *Trichinella*.
However, *Trichinella* is detected in a few wild animals other than wild boars each year. In 2021, 4 cases of *Trichinella* infections (*T. britovi*) were reported in wild animals to the FSVO by the cantonal veterinarians (2x in wolves, 1x in lynx, 1x in golden jackal). Never more than 6 cases were reported per year in carnivorous wild animals, mainly in lynx (about 90%). *Trichinella britovi* circulates in the wild animal population since decades. Up to the year 2020, the nematodes involved in the wild animal population were always *Trichinella britovi.* 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 2021, 1'118 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 2021, 2'295'051 slaughter pigs (93.4% 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 and flour.
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).

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

In 2021, 922 laboratory confirmed cases of human STEC infections were registered. The notification rate was 10.6 per 100'000 inhabitants (2019: 715 cases, 8.2/100'000), almost reaching the case numbers prior to the start of the Covid-19 pandemic. The slight decrease since the previous year was likely multifactorially influenced by the COVID-19 pandemic. There were more women (56%) than men (44%) affected. No source of infection could be identified. The number of HUS is increased slightly with 25 cases in 2021 (18 cases in 2020), thereof 11 were children under 5 years of age and 9 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. An emergence of STEC O80:H2, an uncommon hybrid pathotype, was seen in Switzerland over the last years.
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, M., 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, A., 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.

*** 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

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 four 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). In 2021, no imported human cases were reported.

In 2021, 8 horses and 1 donkey 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 2021, 18 birds from zoos and 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, a surveillance in mosquitoes for flaviviruses is carried out in the Canton of Ticino, which is very close to a big endemic area for WNV in Northern Italy. During the 2021 season starting from the beginning of July to the end of September, 10 sites were monitored with a total of 70 traps used and 3258 mosquitoes collected. Only *Cx. pipiens/torrentium* pool were analyzed because no *Cx. modestus* specimens were found. A total of 77 pools of Cx. pipiens/torrentium and 60 FTA cards have been analyzed for flaviviruses, and all samples were – like all the years before - negative for WNV.

Up to date there were no autochthonous cases of WNF reported. However, it cannot be excluded that WNV is circulating in Switzerland, especially in wild birds and mosquito populations.

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 notifiable (TSV, Article 5: disease to be monitored and Article 291).

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

No official data for human 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 2021, NENT tested 78 human samples positive for *Yersinia* which was within the range of the usual annual fluctuation. They found 74 *Y. enterocolitica, 2 Y. pseudotuberculosis,* 1 *Y. intermedia and* 1 *Y. fredericksenii.*

In 2021 19 cases of yersiniosis in animals were reported to the FSVO by cantonal veterinarians (13 in dogs, 2 in guinea pigs and 1 each in cats, horses, goats and deer). In the last 10 years never more than 19 cases per year were reported: affected were mainly dogs (53%), cattle (8%), cats (5%), pigs (4%) and guinea pigs (7%).

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.

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)]

None.

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.

*** 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 2021, 37 outbreaks were reported throughout Switzerland by the supervisory authorities. In total, more than 540 people became ill and at least 40 people were hospitalized.
The number of reported outbreaks in Switzerland was relatively stable until 2020. In contrast, a significant increase was observed in 2021. The causes of this increase are not confirmed but hypotheses can be formulated.
First, it is known that not all cases of food-borne diseases are reported. Consequently, the collected data do not necessarily give a complete picture of the actual situation. The reporting of cases depends, among other things, on the number of patients, the severity of the disease, the possible hospitalizations associated with it as well as the collaboration of the various actors involved (patients, doctors, control authorities). 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 set up projects to provide them with the necessary investigation tools during such events. These tools are now available to the authorities and the increase in the number of cases may reflect improved awareness (*Investigation manuals for foodborne outbreaks (admin.ch)*).
Small outbreaks, associated with a small number of people, may now be reported more systematically, even if the cause of the outbreak has not been conclusively elucidated.
Another possibility is that 2021 has seen a real worsening of the food safety situation, possibly linked to the COVID-19 pandemic and the upheavals in the restaurant industry. Finally, a simple coincidence can also be a plausible hypothesis. The data for the next few years may provide us with an answer.
In 20 of the 37 reported outbreaks, it was possible to identify the causative agent with a high probability. However, the food at the origin of the contamination could only be identified with a strong evidence in 12 outbreaks. Restaurants and similar settings for collective catering were the most frequent settings of outbreaks.
The majority of the outbreaks (32) involved only one canton. In the remaining five cases, at least four different cantons were involved in each of the outbreaks, one of which also affected countries other than Switzerland.

28.4. Descriptions of single outbreaks of special interest

The nationwide outbreak related to the consumption of frozen berries contaminated with norovirus, affecting at least 125 people, is noteworthy.
From July 9th to 23rd 2021, 37 people staying in the same hotel became ill with symptoms of severe vomiting and profuse diarrhoea. Some of the patients also developed fever and headaches. From July 27th to August 5th, another canton faced an outbreak of 58 cases with the same symptoms in a nursing home, of which two people had to be hospitalized. During the same period, in a third canton, 20 patients and one staff member in a treatment and rehabilitation centre showed similar symptoms. Finally, at the end of July, a fourth canton reported an outbreak with similar characteristics in four people who had eaten in a restaurant. The investigation then revealed that one of the four guests had infected 6 other people in a nursing home.
Large investigations were carried out in each of the cantons concerned and these cases were reported to the federal authorities. The results revealed that the sick people in the hotel and the nursing home had all consumed a bircher-müesli with berries and the people in the restaurant had consumed a berry-based dessert. Suspicion therefore focused on berries as a potentially contaminated ingredient. In addition, stool analyses of several patients were carried out and the results showed the presence of norovirus.
It turned out that in the outbreaks in the four cantons involved mixture of frozen berries from the same supplier and with the same batch number. This product was intended exclusively for catering establishments, hotels, bakeries and nursing homes. The distribution of the products was immediately suspended and recalled. On Monday August 2nd 2021, all customers were informed of the recall. It should be noted that norovirus was found in a sample of berries taken during the outbreak in the hotel. The frozen berry mix was manufactured in Serbia and purchased by the Swiss supplier from a trader in Germany. A notification from Switzerland was established in the European Rapid Alert System RASFF, so that the authorities in Germany were informed.
Another nationwide outbreak involved infections with the hepatitis E virus (HEV). Between January and May 2021, the Federal Office of Public Health (FOPH) recorded an unusual increase in cases of hepatitis E, which led to further investigation. A total of 105 cases were reported nationwide, almost three times as many as in previous years for the same period. 29 patients were hospitalized and two died. Cases were more likely to be male than female, and ages ranged from 18 to 87 years. Despite systematic investigation of the cases in a case-control study and extensive food testing (198 samples of meat and meat products), no source of infection could be identified. However, it was shown that the infections were caused by an HEV subtype that is predominant in the Swiss pig population (*OFSP-Bulletin 4/2022, Flambée d'hépatite E en 2021 en Suisse*).
A small outbreak involving two persons, one of whom was hospitalized, is still of interest. The infection was not related to a bacterium or virus but to a toxin. After eating a morel pizza, a couple developed symptoms of illness that led investigators to point to the morels, in particular the condition of the husband who had to be hospitalized in intensive care for two days after the dinner. Morels, if eaten raw or undercooked, are toxic. Their toxins, haemolysin, are destroyed by heat if the cooking time is sufficient. In this case, an on-site inspection showed that the restaurant owner did not cook the morels long enough to make them safe to eat.

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 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, in comparison to 2019 no major changes or decreasing trends in antimicrobial resistance rates in zoonotic and indicator bacteria isolated from fattening pigs, calves under one year, pig and beef meat were detected in 2021.
Antimicrobial resistance rates of *Campylobacter coli* from fattening pigs showed no major changes in resistance rates. *Campylobacter jejuni* from calves under one year was analysed for the first time. Both, *Campylobacter coli* and *Campylobacter jejuni* showed high resistance rates (>50%) for ciprofloxacin and tetracycline.
Antimicrobial resistance rates of indicator *E. coli* from fattening pigs and calves under one year showed no major changes in resistance rates compared to 2019. Resistance to cefotaxime, ceftazidime was detected in two isolates from calves, meropenem and colistin resistance was not detected at all.
With selective enrichment the detection rate of ESBL-producing *Escherichia coli* in fattening pigs (6%) and calves (24%) under one year decreased in comparison to 2019. ESBL-producing isolates from calves under one year showed a high resistance rate to ciprofloxacin (50%). Moreover, no ESBL-producing *Escherichia coli* was isolated from pig and beef meat.
With selective enrichment the detection rate of Carbapenemase-producing *Escherichia coli* was zero (0%) for fattening pigs, calves under one year, pig and beef meat.
With one –step enrichment the detection rate of MRSA in fattening pigs is comparable high in 2021 (54%) to 2019 (53%), whereas the detection rate in calves under one year increased from 4% in 2019 to 6% in 2021.
In total 154 *Salmonella* isolates from livestock were tested, no isolate was confirmed as ESBL-producing strain. No carbapenemase-producing isolate was detected.

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

The high resistance rates to ciprofloxacin in porcine *Campylobacter coli* and *Campylobacter jejuni* from calves should be followed up. In contrast, the decreased detection rate of ESBL-producing *Escherichia coli* in fattening pigs and calves under one year is desirable. Remarkable thereby, the remaining ESBL-producing *Escherichia coli* in calves showed a high resistance rate for ciprofloxacin, too. The MRSA prevalence in fattening pigs is very high, but all isolates belonged to the livestock-associated MRSA cluster.

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

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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 six slaughterhouses included in the monitoring program produce over 80% 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.

31.3. Randomisation procedure per animal population and food category

A random sample of 298 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 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) (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.

31.6. Results of investigation

Antimicrobial resistance rates of 191 *Campylobacter coli* from fattening pigs showed no major changes in resistance rates. Resistance rates against ciprofloxacin (54%) and tetracycline are still high (67%).

31.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / caecum of calves under one 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 seven slaughterhouses included in the monitoring program produce over 75% 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.

32.3. Randomisation procedure per animal population and food category

A random sample of 294 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 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) (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.

32.6. Results of investigation

Antimicrobial resistance rates of 143 *Campylobacter jejuni* from calves under one year showed high resistance rates against ciprofloxacin (58%) and tetracycline (46%).

32.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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 six slaughterhouses included in the monitoring program produce over 80% 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.

33.3. Randomisation procedure per animal population and food category

A random sample of 188 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) (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. If ESBL/CARBA-suspicious isolates occur, the EUVSEC2 plate was used additionally for confirmation.

33.6. Results of investigation

Antimicrobial resistance rates of 170 indicator *E. coli* from fattening pigs showed in general no major changes in resistance rates compared to 2019. 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 2022 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* / caecum of calves under one 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 seven slaughterhouses included in the monitoring program produce over 75% 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.

34.3. Randomisation procedure per animal population and food category

A random sample of 191 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) (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. If ESBL/Carba-suspicious isolates occur, the EUVSEC2 plate was used additionally for confirmation.

34.6. Results of investigation

Antimicrobial resistance rates of 180 indicator *E. coli* from calves under one year showed in general no major changes in resistance rates compared to 2019. Two isolates were confirmed as ESBL producers. Resistance to meropenem and colistin was not detected.

34.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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 six slaughterhouses included in the monitoring program produce over 80% 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.

35.3. Randomisation procedure per animal population and food category

A random sample of 289 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) (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.

35.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *E. coli* in fattening pigs decreased again from 13.1% in 2019 to 5.9% in 2021.

35.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / caecum of calves under one 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 seven slaughterhouses included in the monitoring program produce over 75% 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.

36.3. Randomisation procedure per animal population and food category

A random sample of 294 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) (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.

36.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *E. coli* in calves under one year decreased again from 33% in 2019 to 24% in 2021.

36.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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 methods were investigated. 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) (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.

37.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *E. coli* was zero (0%) for pig meat.

37.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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 competeeefnt 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% meta from abroad was sampled.

38.3. Randomisation procedure per animal population and food category

A random sample of 307 meat samples for selective enrichment methods were investigated. 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) (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.

38.6. Results of investigation

With selective enrichment the detection rate of ESBL-producing *E. coli* was zero (0%) for beef meat.

38.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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 six slaughterhouses included in the monitoring program produce over 80% 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.

39.3. Randomisation procedure per animal population and food category

A random sample of 288 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) (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.

39.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for slaughter pigs.

39.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / caecum of calves under one 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 seven slaughterhouses included in the monitoring program produce over 75% 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.

40.3. Randomisation procedure per animal population and food category

A random sample of 294 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) (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.

40.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for slaughtered calves under one year.

40.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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 307 meat samples for selective enrichment methods were investigated. 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) (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.

41.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for pig meat.

41.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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* / 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% meta from abroad was sampled.

42.3. Randomisation procedure per animal population and food category

A random sample of 307 meat samples for selective enrichment methods were investigated. 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) (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.

42.6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for beef meat.

42.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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; MRSA / nasal swabs of fattening pigs

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

The six slaughterhouses included in the monitoring program produce over 80% 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.

43.3. Randomisation procedure per animal population and food category

A random sample of 289 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.

43.4. 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)).

43.5. 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.

43.6. Results of investigation

With selective enrichment the MRSA prevalence in fattening pigs (54%) is comparable high as in 2019 (53%). All isolates were livestock-associated MRSA.

43.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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; MRSA / nasal swabs of calves under one year

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

The seven slaughterhouses included in the monitoring program produce over 75% 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.

44.3. Randomisation procedure per animal population and food category

A random sample of 294 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.

44.4. 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)).

44.5. 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.

44.6. Results of investigation

With selective enrichment the MRSA prevalence in calves under one year increased from 3.8% in 2019 to 6.1% in 2021. All isolates except one strain were livestock-associated MRSA.

44.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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; *Salmonella* spp. / diverse livestock species

45.1. 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. Therefore, besides isolates from national control programs (breeding hens, laying hens, broilers and fattening turkeys, Swiss ordinance of epizootics (TSV, Article 255-261) isolates from diagnostic submissions from livestock were included.

45.2. Stratification procedure per animal population and food category

All *Salmonella enterica* subspecies *enterica* isolates from hen, turkey, pigs, cattle, sheep and goat serotyped at the national reference laboratory in 2021 were tested for AMR.

45.3. Randomisation procedure per animal population and food category

No randomisation take place. A total of 154 *Salmonella* isolates were tested.

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

Identification and serotyping according to ISO 6579 was performed.

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

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC3) (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. If ESBL or CARBA suspicious isolates occurred, the EUVSEC2 plate was used for confirmation.

45.6. Results of investigation

In total 154 *Salmonella* isolates were tested, no ESBL nor CARBA isolate was detected.

45.7. Additional information

Further information will be found in the Swiss antibiotic resistance report 2022 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