

## Malta

### TRENDS AND SOURCES OF ZOONOSES AND ZOOTIC AGENTS IN FOODSTUFFS, ANIMALS AND FEEDINGSTUFFS

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

## IN 2017

## PREFACE

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

The report contains information on trends and sources of zoonoses and zoonotic agents in Malta during the year 2017.

The information covers the occurrence of these diseases and agents in animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and indicator bacteria as well as information on epidemiological investigations of foodborne outbreaks.

Complementary data on susceptible animal populations in the country is also given. The information given covers both zoonoses that are important for the public health in the whole European Union as well as zoonoses, which are relevant on the basis of the national epidemiological situation.

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

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

The information covered by this report is used in the annual European Union Summary Reports on zoonoses and antimicrobial resistance that are published each year by EFSA.

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

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

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## ANIMAL POPULATION TABLES

Table Susceptible animal population

Animal species	Category of animals	Population			
		holding	animal	slaughter animal (heads)	herd/flock
Cattle (bovine animals)	Cattle (bovine animals)			4,313	
	Cattle (bovine animals) - adult cattle over 2 years		231		
	Cattle (bovine animals) - calves (under 1 year) - dairy calves		2,218		
	Cattle (bovine animals) - dairy cows	98			
	Cattle (bovine animals) - dairy cows - adult		6,653		
	Cattle (bovine animals) - dairy cows - young cattle (1-2 years)		2,041		
	Cattle (bovine animals) - meat production animals	168			
	Cattle (bovine animals) - meat production animals - calves (under 1 year)		2,303		
	Cattle (bovine animals) - meat production animals - young cattle (1-2 years)		981		
Dogs	Dogs		66,731		
Gallus gallus (fowl)	Gallus gallus (fowl) - broilers	65	1,979,821	2,098,165	417
	Gallus gallus (fowl) - laying hens	26	323,604		
	Gallus gallus (fowl) - mixed flocks/holdings	3			
Goats	Goats	357	5,084	1,238	
Pigs	Pigs - breeding animals - not raised under controlled housing conditions	6			
	Pigs - breeding animals - not raised under controlled housing conditions - boars		180	70	
	Pigs - breeding animals - not raised under controlled housing conditions - gilts		464		
	Pigs - breeding animals - not raised under controlled housing conditions - sows		2,854	961	
	Pigs - fattening pigs - not raised under controlled housing conditions	9	31,265	54,376	
	Pigs - mixed herds - not raised under controlled housing conditions	92			
Sheep	Sheep	862	11,958	5,984	
Sheep and goats	Sheep and goats	450			
Solipeds, domestic	Solipeds, domestic			3	

**DISEASE STATUS TABLES**

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

Region	Number of herds with status officially free	Number of infected herds	Total number of herds
MALTA	266	0	266

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

Region	Number of herds with status officially free	Number of infected herds	Total number of herds
MALTA	1,669	0	1,669

**DISEASE STATUS TABLES**

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

Region	Number of herds with status officially free	Number of infected herds	Total number of herds
MALTA	265	1	266

PREVALENCE TABLES

Table Brucella:BRUCELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Cattle (bovine animals) - Farm - Malta - animal sample - blood - Surveillance - Official sampling - Census	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	12314	0	Brucella	0
	Sheep and goats - Farm - Malta - animal sample - blood - Surveillance - Official sampling - Census	Rose Bengal plate test (RBT)/Buffered Brucella antigen test (BBAT)	animal	20306	0	Brucella	0



Table Echinococcus:ECHINOCOCCUS in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Dogs - Farm - Malta - animal sample - faeces - Surveillance - Official sampling - Objective sampling	Flotation technique for faecal parasites	animal	383	0	Echinococcus	0

Table Mycobacterium:MYCOBACTERIUM in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Cattle (bovine animals) - dairy cows - Slaughterhouse - Malta - animal sample - lymph nodes - Clinical investigations - Official sampling - Suspect sampling	PCR	animal	6	5	Mycobacterium bovis	2
						Mycobacterium tuberculosis complex (MTC)	3

Table Salmonella:SALMONELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	N of flocks under control programme	Target verification	Method	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Gallus gallus (fowl) - broilers - before slaughter - Farm - Malta - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	ISO 6579:2002/Am d 1:2007	412	65	Salmonella Croft	1
								Salmonella GIVE	4
								Salmonella Haifa	12
								Salmonella Infantis	7
								Salmonella Kedougou	4
								Salmonella Kentucky	25
								Salmonella Livingstone	5
								Salmonella Tomegbe	4
								Salmonella Uganda	2
								Salmonella Virchow	1
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Malta - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	416	Y	Not Available	416	69	Salmonella Croft	1
								Salmonella GIVE	4
								Salmonella Haifa	13
								Salmonella Infantis	8
								Salmonella Kedougou	5
								Salmonella Kentucky	26
								Salmonella Livingstone	5
								Salmonella Tomegbe	4
								Salmonella Uganda	2
								Salmonella Virchow	1
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Malta - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock		N_A	ISO 6579:2002/Am d 1:2007	4	4	Salmonella Haifa	1
								Salmonella Infantis	1
								Salmonella Kedougou	1
								Salmonella Kentucky	1
	Gallus gallus (fowl) - laying hens - adult - Farm - Malta - animal sample - faeces - Control and eradication programmes - Official and industry sampling - Census	herd/flock	83	Y	ISO 6579:2002/Am d 1:2007	50	21	Salmonella Croft	2
								Salmonella GIVE	1
								Salmonella Infantis	6
								Salmonella Kedougou	2
								Salmonella Kentucky	5
								Salmonella Livingstone	4
								Salmonella Typhimurium	1
	Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - Farm - Malta - environmental sample - Control and eradication programmes - Industry sampling - Census	herd/flock		N_A	ISO 6579:2002/Am d 1:2007	23	10	Salmonella Croft	1
								Salmonella Enteritidis	1
								Salmonella Infantis	2
								Salmonella Kedougou	2
								Salmonella Kentucky	2
								Salmonella Livingstone	1
	Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - Farm - Malta - environmental sample - Control and eradication programmes - Official sampling - Census	herd/flock		N_A	ISO 6579:2002/Am d 1:2007	6	6	Salmonella Virchow	1
								Salmonella Haifa	1
								Salmonella Infantis	2
								Salmonella Kentucky	1
								Salmonella Livingstone	1
								Salmonella Suberu	1

Table Salmonella:SALMONELLA in food

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Method	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Meat from pig - carcase - Slaughterhouse - Malta - food sample - carcase swabs - Surveillance - based on Regulation 2073 - Official, based on Regulation 854/2004 - Objective sampling	single (food/food)	400	Square centimetre	Not Available	187	17	Salmonella Abadina	1
								Salmonella Croft	2
								Salmonella Derby	1
								Salmonella Enteritidis	1
								Salmonella Give	1
								Salmonella Haifa	3
								Salmonella Infantis	2
								Salmonella Kedougou	1
								Salmonella Livingstone	1
								Salmonella Rissen	1
								Salmonella Typhimurium	1
								Salmonella Typhimurium, monophasic	2

Table Trichinella:TRICHINELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
Not Available	Pigs - breeding animals - not raised under controlled housing conditions - sows and boars - Slaughterhouse - Malta - animal sample - organ/tissue - Surveillance - Official sampling - Census	Magnetic stirrer method for pooled sample digestion	animal	1031	0	Trichinella	0
	Pigs - fattening pigs - not raised under controlled housing conditions - Slaughterhouse - Malta - animal sample - organ/tissue - Surveillance - Official sampling - Census	Magnetic stirrer method for pooled sample digestion	animal	54376	0	Trichinella	0
	Solipeds, domestic - Slaughterhouse - Malta - animal sample - organ/tissue - Surveillance - Official sampling - Census	Magnetic stirrer method for pooled sample digestion	animal	3	0	Trichinella	0

## FOODBORNE OUTBREAKS TABLES

### Foodborne Outbreaks: summarized data

Causative agent	Food vehicle	Outbreak strenght			
		Weak			
		N outbreaks	N human cases	N hospitalized	N deaths
Campylobacter	Broiler meat (Gallus gallus) and products thereof	3	8	1	0
	Unknown	5	9	2	0
Escherichia coli	Bovine meat and products thereof	1	2	1	0
	Unknown	1	4	0	0
Norovirus	Crustaceans, shellfish, molluscs and products thereof	1	6	1	0
	Bakery products	1	55	3	0
Salmonella	Broiler meat (Gallus gallus) and products thereof	1	2	0	0
	Unknown	2	5	1	0
Scrombotoxin	Fish and fish products	3	6	0	0
Unspecified	Bovine meat and products thereof	1	69	2	0
	Unknown	18	164	0	0

**Strong Foodborne Outbreaks: detailed data**

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

## Weak Foodborne Outbreaks: detailed data

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Campylobacter	Not Available	N_A	General	Broiler meat (Gallus gallus) and products thereof	N_A	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	3	8	1	0
			Household	Unknown	N_A	Descriptive epidemiological evidence	Household	Not Available	Not Available	Not Available	N_A	5	9	2	0
Escherichia coli	Not Available	N_A	General	Bovine meat and products thereof	beef burger	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
			Household	Unknown	N_A	Descriptive epidemiological evidence	Household	Not Available	Not Available	Not Available	N_A	1	4	0	0
Norovirus	Not Available	N_A	General	Crustaceans, shellfish, molluscs and products thereof	N_A	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	6	1	0
				Bakery products	N_A	Descriptive epidemiological evidence	Canteen or workplace catering	Canteen or workplace catering	Not Available	Infected food handler	N_A	1	55	3	0
Salmonella	Not Available	N_A	Household	Broiler meat (Gallus gallus) and products thereof	chicken noodles	Descriptive epidemiological evidence	Take-away or fast-food outlet	Not Available	Not Available	Not Available	N_A	1	2	0	0
				Unknown	N_A	Descriptive epidemiological evidence	Household	Not Available	Not Available	Not Available	N_A	2	5	1	0
Scrombotoxin	Not Available	N_A	General	Fish and fish products	tuna	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Storage time/temperature abuse	N_A	3	6	0	0



Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Unspecified	Not Available	N_A	General	Bovine meat and products thereof	meatballs	Descriptive epidemiological evidence	Residential institution (nursing home or prison or boarding school)	Not Available	Not Available	Not Available	N_A	1	69	2	0
				Unknown	N_A	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	18	164	0	0

**ANTIMICROBIAL RESISTANCE TABLES FOR CAMPYLOBACTER**

ANTIMICROBIAL RESISTANCE TABLES FOR SALMONELLA

Table Antimicrobial susceptibility testing of Salmonella Abadina in Meat from pig - carcass

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcass swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

Table Antimicrobial susceptibility testing of Salmonella Enteritidis in Meat from pig - carcass

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcass swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

MIC	AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
	ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
	Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
	Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
	N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	N of resistant isolates	0	0	0	0	0	0	0	0	0	0	1	0	0	0
<=0.015	1														
<=0.03	1														
<=0.25	11														
<=0.5	1														
<=1	1														
<=2	1														
2	1														
<=4	1														
4	1														
<=8	1														
>1024	1														

Table Antimicrobial susceptibility testing of Salmonella Give in Meat from pig - carcass

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcass swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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



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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

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

Sampling Stage: Slaughterhouse

Sampling Type: food sample - carcase swabs

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Malta

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

ANTIMICROBIAL RESISTANCE TABLES FOR INDICATOR ESCHERICHIA COLI

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

Sampling Stage: Retail		Sampling Type: food sample - meat					Sampling Context: Monitoring								
Sampler: Official sampling		Sampling Strategy: Objective sampling					Programme Code: ESBL MON pnI2								
Analytical Method:															
Country of Origin: Ireland															
AM substance	Cefepime	Cefotaxim		Cefotaxime + Clavulanic acid		Cefoxitin	Ceftazidim		Ceftazidime + Clavulanic acid		Ertapenem	Imipenem	Meropenem	Temocillin	
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available
	Ceftazidime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	0.25	0.25	8	0.5	0.5	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.25	0.064	0.064	0.5	0.25	0.25	0.12	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	64	64	128	128	128	128	2	16	16	64
	N of tested isolates	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	N of resistant isolates	4	4	4	1	1	2	4	4	1	1	1	0	0	0
	MIC														
	<=0.015														
<=0.03															
0.03															
<=0.064															
0.064															
<=0.12															
0.12															
0.25															
0.5															
1															
2															
4															
8															
16															
32															
>32															
>64															

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

Sampling Stage: Retail			Sampling Type: food sample - meat					Sampling Context: Monitoring							
Sampler: Official sampling			Sampling Strategy: Objective sampling					Programme Code: ESBL MON							
Analytical Method:															
Country of Origin: Ireland															
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
	ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
	Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
	Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
	N of tested isolates	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	N of resistant isolates	4	1	4	3	2	2	0	1	0	1	4	2	0	2
	MIC														
	<=0.03	3													
	0.03	2													
	0.064	1													
<=0.25	2														
0.25	1														
<=0.5	1														
0.5	2														
<=1	4														
1	3														
<=2	1														
2	1														
<=4	3														
4	2														
>4	2														
<=8	2														
8	1														
>8	1														
32	1														
>32	1														
64	1														
>64	3														
128	1														
>128	1														
512	1														
>1024	3														



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

Sampling Stage: Retail		Sampling Type: food sample - meat						Sampling Context: Monitoring											
Sampler: Official sampling		Sampling Strategy: Objective sampling						Programme Code: ESBL MON pnI2											
Analytical Method:																			
Country of Origin: Italy																			
AM substance	Cefepime		Cefotaxim		Cefotaxime + Clavulanic acid		Cefoxitin		Ceftazidim		Ceftazidime + Clavulanic acid		Ertapenem		Imipenem		Meropenem		Temocillin
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available					
	Ceftazidime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available					
	ECOFF	0.125	0.25	0.25	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32						
	Lowest limit	0.064	0.25	0.25	0.064	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5						
	Highest limit	32	64	64	64	64	64	128	128	2	16	16	64						
	N of tested isolates	4	4	4	4	4	4	4	4	4	4	4	4						
	N of resistant isolates	4	4	4	1	1	0	4	0	1	0	0	0						
	MIC																		
	<=0.015																		
<=0.03																			
0.03																			
<=0.064	3																		
<=0.12																			
0.12																			
0.25																			
2																			
4																			
8	1																		
16	1																		
>32	2																		
64	1																		
>64	2	1	1																

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

Sampling Stage: Retail				Sampling Type: food sample - meat				Sampling Context: Monitoring							
Sampler: Official sampling				Sampling Strategy: Objective sampling				Programme Code: ESBL MON							
Analytical Method:															
Country of Origin: Italy															
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
	ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
	Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
	Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
	N of tested isolates	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	N of resistant isolates	4	0	4	4	1	4	1	1	0	2	4	4	0	4
	MIC														
	<=0.03														
	<=0.25														
	0.25														
<=0.5															
0.5															
<=1															
1															
2															
4															
>4															
<=8															
8															
16															
>16															
32															
>32															
64															
>64															
128															
>128															
>1024															

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

Sampling Stage: Retail	Sampling Type: food sample - meat	Sampling Context: Monitoring
Sampler: Official sampling	Sampling Strategy: Objective sampling	Programme Code: ESB MON pml2
Analytical Method:		
Country of Origin: Argentina		

AM substance	Cefazolin sodium + Clavulanic acid																			
	Cefepime		Cefotaxim		Cefotaxime + Clavulanic acid		Cefoxitin		Ceftazidim		Ceftazidime + Clavulanic acid		Ertapenem		Imipenem		Meropenem		Temocillin	
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Negative/Abs ent	Not Available	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available		
Ceftazidime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Negative/Abs ent	Not Available	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available			
ECOFF	0.125	0.125	0.25	0.25	0.25	0.064	0.064	8	0.5	0.5	0.5	0.5	0.06	0.5	0.125	32				
Lowest limit	0.064	0.064	0.25	0.064	0.064	0.5	0.5	0.25	0.25	0.12	0.12	0.015	0.12	0.03	0.5					
Highest limit	32	32	64	64	64	64	64	128	128	128	128	2	16	16	64					
N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
N of resistant isolates	2	2	2	0	0	0	0	0	1	1	0	0	0	0	0	0				
<=0.015																				
<=0.03																				
<=0.064																				
<=0.12																				
0.25																				
0.5																				
1																				
4																				
8																				
16																				
64																				

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

Sampling Stage: Retail

Sampler: Official sampling

Analytical Method:

Country of Origin: Argentina

Sampling Type: food sample - meat

Sampling Strategy: Objective sampling

Sampling Context: Monitoring

Programme Code: ESBL MON

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

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

Sampling Stage: Retail		Sampling Type: food sample - meat				Sampling Context: Monitoring										
Sampler: Official sampling		Sampling Strategy: Objective sampling				Programme Code: ESBL MON pnI2										
Analytical Method:																
Country of Origin: Australia																
AM substance	Cefepime	Cefotaxin		Cefotaxime + Clavulanic acid		Cefoxitin	Ceftazidim		Ceftazidime + Clavulanic acid		Ertapenem	Imipenem	Meropenem	Tenocillin		
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available	
	Ceftazidime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available	
	ECOFF	0.125	0.25	0.25	0.25	0.25	8	0.5	0.5	0.5	0.5	0.06	0.5	0.125	32	
	Lowest limit	0.064	0.25	0.25	0.064	0.064	0.5	0.25	0.25	0.12	0.12	0.015	0.12	0.03	0.5	
	Highest limit	32	64	64	64	64	64	128	128	128	128	2	16	16	64	
	N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	N of resistant isolates	2	2	2	1	1	1	2	2	1	1	1	0	0	0	
	MIC															
	<=0.015											1				
<=0.03											2					
<=0.064																
<=0.12											1	1				
0.12													1			
0.25													1			
0.5	2															
2																
8	1															
16															1	
32	1															
>64	1															

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

Sampling Stage: Retail			Sampling Type: food sample - meat					Sampling Context: Monitoring						
Sampler: Official sampling			Sampling Strategy: Objective sampling					Programme Code: ESBL MON						
Analytical Method:														
Country of Origin: Australia														
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2
N of resistant isolates	2	0	2	2	2	1	0	1	0	1	2	1	0	1
MIC														
<=0.015	1													
<=0.03	2													
0.12	1													
<=0.25													2	1
<=1	2													
1	1													
<=2	1													
2	1													
<=4	1													
>4	1													
8	2													
>8	1													
32	1													
>32	1													
>64	2												1	
128	1													
>1024	2													

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

Sampling Stage: Retail				Sampling Type: food sample - meat				Sampling Context: Monitoring													
Sampler: Official sampling				Sampling Strategy: Objective sampling				Programme Code: ESBL MON pnI2													
Analytical Method:																					
Country of Origin: Netherlands																					
AM substance	Cefepime		Cefotaxim		Cefotaxime + Clavulanic acid		Cefoxitin		Ceftazidim		Ceftazidime + Clavulanic acid		Ertapenem		Imipenem		Meropenem		Temocillin		
	Cefotaxime synergy test	Not Available	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available	Not Available	
	Ceftazidime synergy test	Not Available	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available	Not Available	
	ECOFF	0.125	0.25	0.25	0.25	0.25	0.25	0.25	8	0.5	0.5	0.5	0.5	0.5	0.5	0.06	0.5	0.125	32		
	Lowest limit	0.064	0.25	0.25	0.25	0.064	0.064	0.064	0.5	0.25	0.25	0.25	0.12	0.12	0.12	0.015	0.12	0.03	0.5		
	Highest limit	32	64	64	64	64	64	64	64	128	128	128	128	128	128	2	16	16	64		
	N of tested isolates	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	N of resistant isolates	5	6	6	6	2	2	2	2	6	6	6	2	2	2	0	0	0	0	0	
	MIC																				
	<=0.015																2				
	<=0.03																		6		
	0.03																4				
	<=0.064																				
	<=0.12																2		2		
	0.12	1																			
0.25	1																	4			
1																					
2																					
4																					
8	1															1		1			
16	2																	1			
32	1																				
64																					
>64	3																	1			

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

Sampling Stage: Retail			Sampling Type: food sample - meat					Sampling Context: Monitoring							
Sampler: Official sampling			Sampling Strategy: Objective sampling					Programme Code: ESBL MON							
Analytical Method:															
Country of Origin: Netherlands															
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
	ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
	Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
	Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
	N of tested isolates	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	N of resistant isolates	6	0	6	6	1	4	0	2	0	3	5	3	0	3
	MIC														
	<=0.015	2													
	<=0.03	6													
	<=0.25	6													
0.25	1														
<=0.5	4														
0.5	1														
<=1	6														
1	2														
<=2	3														
<=4	2														
4	2														
>4	4														
<=8	5														
8	3														
>8	1														
16	1														
32	1														
>32	2														
64	1														
>64	6														
128	1														
>128	2														
>1024	5														



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

Sampling Stage: Retail		Sampling Type: food sample - meat						Sampling Context: Monitoring					
Sampler: Official sampling		Sampling Strategy: Objective sampling						Programme Code: ESBL MON pnI2					
Analytical Method:													
Country of Origin: Uruguay													
AM substance		Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin		
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available
	Ceftazidime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.5	0.25	0.25	0.12	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	128	128	128	128	2	16	16	64
	N of tested isolates	3	3	3	3	3	3	3	3	3	3	3	3
	N of resistant isolates	3	3	0	0	2	2	0	0	0	0	0	0
	MIC												
	<=0.015	2											
	<=0.03	3											
	0.03	1											
	<=0.064	3											
	<=0.12	1											
	0.25	1											
	0.5	1											
	2	1											
	4	2											
	8	3											
	16	1											
	32	1											
	64	1											
	>64	1											

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

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method:

Country of Origin: Uruguay

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

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

Sampling Stage: Retail

Sampler: Official sampling

Analytical Method:

Country of Origin: Unknown

Sampling Type: food sample - meat

Sampling Strategy: Objective sampling

Sampling Context: Monitoring

Programme Code: ESBL MON pnI2

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Tenecillin	
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available	
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32	
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5	
Highest limit	32	64	64	64	128	128	2	16	16	64	
N of tested isolates	2	2	2	2	2	2	2	2	2	2	
N of resistant isolates	2	2	0	0	2	0	0	0	0	0	
MIC											
<=0.015	2										
<=0.03	2										
<=0.064	2										
<=0.12	1						2				
0.25	1										
2				1						1	
4	1			1						1	
8	1										1
16					1						
32					1						
64	1										

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

Sampling Stage: Retail			Sampling Type: food sample - meat					Sampling Context: Monitoring						
Sampler: Official sampling			Sampling Strategy: Objective sampling					Programme Code: ESBL MON						
Analytical Method:														
Country of Origin: Unknown														
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2
N of resistant isolates	2	0	2	2	2	1	0	0	0	1	2	0	0	1
MIC														
<=0.015	1													
<=0.03	2													
<=0.25	2												2	1
<=0.5	2												2	1
<=1	1												1	1
1	1												1	1
<=2	1												1	1
2	1												1	1
<=4	1												1	1
4	1												1	1
>4	1												1	1
8	2												1	1
>8	1												1	1
32	1												1	1
>32	1												1	1
>64	2												1	1
128	1												1	1
>128	1												1	1
>1024	2												1	1

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

Sampling Stage: Retail

Sampler: Official sampling

Analytical Method:

Country of Origin: Brazil

Sampling Type: food sample - meat

Sampling Strategy: Objective sampling

Sampling Context: Monitoring

Programme Code: ESBL MON pnI2

AM substance										
	Cefepime	Cefotaxin	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Tenocillin
Cefotaxime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	1	0	0	1	0	0	0	0	0
MIC										
<=0.015	1									
<=0.03	1									
<=0.064	1									
0.25	1									
2	1					1	1			
4	1			1	1					
16	1									

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

Sampling Stage: Retail	Sampling Type: food sample - meat	Sampling Context: Monitoring
Sampler: Official sampling	Sampling Strategy: Objective sampling	Programme Code: ESBL MON
Analytical Method:		
Country of Origin: Brazil		

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

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

Sampling Stage: Retail

Sampler: Official sampling

Analytical Method:

Country of Origin: Germany

Sampling Type: food sample - meat

Sampling Strategy: Objective sampling

Sampling Context: Monitoring

Programme Code: ESBL MON pnl2

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Tenocillin	
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available
	Ceftazidime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	128	128	2	16	16	64
	N of tested isolates	1	1	1	1	1	1	1	1	1	1
	N of resistant isolates	1	1	0	0	1	0	0	0	0	0
	MIC										
	<=0.03										
<=0.064											
0.064											
0.25											
4											
8											
32											
>32											
>64											

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

Sampling Stage: Retail	Sampling Type: food sample - meat	Sampling Context: Monitoring
Sampler: Official sampling	Sampling Strategy: Objective sampling	Programme Code: ESBL MON
Analytical Method:		
Country of Origin: Germany		

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



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

Sampling Stage: Slaughterhouse

Sampler: Official sampling

Analytical Method:

Country of Origin: Malta

Sampling Type: animal sample - caecum

Sampling Strategy: Objective sampling

Sampling Context: Monitoring

Programme Code: AMR MON pni2

AM substance	Cefepime	Cefotaxin	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Tenocillin
	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent	Negative/Abs ent
Cefotaxime synergy test										
Ceftazidime synergy test										
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0
MIC										
<=0.015							1			
<=0.03									1	
<=0.064	1		1							
<=0.12						1		1		
<=0.25		1			1					
1										1
2				1						

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

Sampling Stage: Slaughterhouse			Sampling Type: animal sample - caecum					Sampling Context: Monitoring							
Sampler: Official sampling			Sampling Strategy: Objective sampling					Programme Code: AMR MON							
Analytical Method:															
Country of Origin: Malta															
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2	
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25	
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32	
N of tested isolates	74	74	74	74	74	74	74	74	74	74	74	74	74	74	
N of resistant isolates	13	0	0	1	5	7	0	1	0	4	37	46	0	25	
MIC															
<=0.015	62														
<=0.03	74														
0.03	4														
0.064	1														
0.12	5														
<=0.25	74												69	38	
0.25	1														
<=0.5	73														
0.5	61												5	7	
<=1	42	72													
1	11													1	
<=2	27														
2	17	2												3	
<=4	70														
4	2	5	8												
<=8	67														
8	2														
>8	1														
16	2												3	1	
32	4												7		
>32	23														
64	1	2													
>64	12	14													
128	6														
>128	2														
256	2														
512	2														
>1024	27														

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

Sampling Stage: Slaughterhouse				Sampling Type: animal sample - caecum				Sampling Context: Monitoring																				
Sampler: Official sampling				Sampling Strategy: Objective sampling				Programme Code: ESBL MON pni2																				
Analytical Method:																												
Country of Origin: Malta																												
AM substance																												
	Cefepime		Cefotaxim		Cefotaxime + Clavulanic acid		Cefoxitin		Ceftazidim		Ceftazidime + Clavulanic acid		Ertapenem		Imipenem		Meropenem		Temocillin									
Cefotaxime synergy test	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent	Positive/Present	Negative/Abs ent						
Ceftazidime synergy test	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent						
ECOFF	0.125	0.125	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.5	0.06	0.06	0.06	0.5	0.5	0.125	0.125						
Lowest limit	0.064	0.064	0.064	0.25	0.25	0.25	0.064	0.064	0.064	0.5	0.5	0.5	0.25	0.25	0.25	0.12	0.12	0.12	0.015	0.015	0.015	0.12						
Highest limit	32	32	32	64	64	64	64	64	64	128	128	128	128	128	128	2	2	2	16	16	16	16						
N of tested isolates	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20						
N of resistant isolates	19	19	19	20	20	20	0	0	0	1	1	1	19	19	19	0	0	0	1	1	1	0						
MIC	19	19	19	20	20	20	0	0	0	1	1	1	19	19	19	0	0	0	1	1	1	0						
<=0.015																			13	1	1							
<=0.03																						17						
0.03																						1						
<=0.064							15	1	1							4						1						
0.064																												
<=0.12																						1						
0.12	1						3							16	1	1		18	1	1								
0.25																1												
0.5	2													2														
1													1															
2	2	1			1					3		1		2								5						
4	7				1					7			7		1							5						
8	5			1			1			7	1		6									7						
16					1		1			1			2									1						
32	1				5																							
64					5																							
>64					4																							

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

Sampling Stage: Slaughterhouse			Sampling Type: animal sample - caecum					Sampling Context: Monitoring							
Sampler: Official sampling			Sampling Strategy: Objective sampling					Programme Code: ESBL MON							
Analytical Method:															
Country of Origin: Malta															
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
	ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
	Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
	Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
	N of tested isolates	20	20	20	20	20	20	20	20	20	20	20	20	20	20
N of resistant isolates	20	0	20	19	8	17	0	2	0	7	16	17	0	16	
MIC															
<=0.015	2														
<=0.03	20														
0.064	1														
0.12	5														
<=0.25	19														
0.25	3														
<=0.5	5														
0.5	16														
<=1	1														
1	20														
<=2	2														
2	3														
<=4	17														
4	1														
>4	2														
<=8	6														
8	17														
>8	12														
16	1														
32	1														
>32	1														
64	2														
>64	7														
128	1														
>128	6														
>1024	15														

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

Sampling Stage: Retail			Sampling Type: food sample - meat			Sampling Context: Monitoring									
Sampler: Official sampling			Sampling Strategy: Objective sampling			Programme Code: ESBL MON pnI2									
Analytical Method:															
Country of Origin: Italy															
AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid			Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid			Ertapenem	Imipenem	Meropenem	Tenocillin	
	Cefotaxime synergy test	Not Available	Not Available	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Not Available	Negative/Abs ent	Negative/Abs ent	Not Available	Not Available	Not Available	
	Ceftazidime synergy test	Not Available	Not Available	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Not Available	Negative/Abs ent	Negative/Abs ent	Not Available	Not Available	Not Available	
	ECOFF	0.125	0.25	0.25	0.25	0.25	8	8	0.5	0.5	0.06	0.5	0.125	32	
	Lowest limit	0.064	0.25	0.25	0.064	0.064	0.5	0.5	0.25	0.12	0.015	0.12	0.03	0.5	
	Highest limit	32	64	64	64	64	64	64	128	128	2	16	16	64	
	N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	
	N of resistant isolates	2	2	2	1	1	1	1	1	1	0	0	0	0	
	MIC														
	<=0.015											1			
	<=0.03												2		
	0.03											1			
	<=0.064														
<=0.12												1			
0.25	1											1			
0.5											1				
4	1					1			1						
8			1				1				1				
64			1				1								

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

Sampling Stage: Retail	Sampling Type: food sample - meat	Sampling Context: Monitoring
Sampler: Official sampling	Sampling Strategy: Objective sampling	Programme Code: ESBL MON
Analytical Method:		
Country of Origin: Italy		

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

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

Sampling Stage: Retail		Sampling Type: food sample - meat						Sampling Context: Monitoring							
Sampler: Official sampling		Sampling Strategy: Objective sampling						Programme Code: ESBL MON pnI2							
Analytical Method:															
Country of Origin: Malta															
AM substance	Cefepime	Cefotaxim		Cefotaxime + Clavulanic acid		Cefoxitin	Ceftazidim		Ceftazidime + Clavulanic acid		Ertapenem	Imipenem	Meropenem	Tenocillin	
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Positive/Pres ent	Negative/Abs ent	Positive/Pres ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available	
ECOFF	0.125	0.25	0.25	0.25	0.25	8	0.5	0.5	0.5	0.5	0.06	0.5	0.125	32	
Lowest limit	0.064	0.25	0.25	0.064	0.064	0.5	0.25	0.25	0.12	0.12	0.015	0.12	0.03	0.5	
Highest limit	32	64	64	64	64	64	128	128	128	128	2	16	16	64	
N of tested isolates	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
N of resistant isolates	12	12	12	3	3	3	11	11	3	3	1	1	0	0	
MIC															
<=0.015											6				
<=0.03											12				
0.03											4				
<=0.064											8				
0.064											1				
<=0.12											4	1	6		
0.12											1				
0.25	2	1				4				1	5				
<=0.5											1				
0.5	3														
1	1														
2	1	1	1		1		1		1						
4	1	2	1	1		4	1		1		4				
8	1		1		1	5	1	2	1		6				
16	1	1		1		1	4	1	1		1				
>16											1				
32	2	2	1				1								
>32	1														
64	1		1												
>64	3														

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

Sampling Stage: Retail	Sampling Type: food sample - meat	Sampling Context: Monitoring
Sampler: Official sampling	Sampling Strategy: Objective sampling	Programme Code: ESBL MON
Analytical Method:		
Country of Origin: Malta		

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	12	12	12	12	12	12	12	12	12	12	12	12	12	12
N of resistant isolates	12	0	12	11	6	12	0	5	0	9	9	8	0	7
MIC														
<=0.03									12					
<=0.25						3							8	4
0.25														
<=0.5				1				5						
0.5						3							4	1
<=1							12							
1				1		1		2						
<=2												4		
2			2	2		1								
4		5	3											
>4			7											
<=8					6						2			
8		7		2		3				3				
>8			6		1									
16								3						
32								1				1		
>32								1						7
64	2				1						1	4		
>64	10											3		
128										1				
>128					5					8				
>1024											9			



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

Sampling Stage: Retail

Sampler: Official sampling

Analytical Method:

Country of Origin: Germany

Sampling Type: food sample - meat

Sampling Strategy: Objective sampling

Sampling Context: Monitoring

Programme Code: ESBL MON pnI2

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Tenocillin
	Cefotaxime synergy test	Positive/Pres ent	Positive/Pres ent	Not Available	Negative/Abs ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Negative/Abs ent	Negative/Abs ent	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	1	0	0	0	0	0	0	0	0
MIC										
<=0.015	1									
<=0.03	1									
<=0.064	1									
<=0.12	1									
0.25	1									
0.5	1									
4	1									
8	1									
16	1									
>64	1									

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

Sampling Stage: Retail	Sampling Type: food sample - meat	Sampling Context: Monitoring
Sampler: Official sampling	Sampling Strategy: Objective sampling	Programme Code: ESBL MON
Analytical Method:		
Country of Origin: Germany		

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

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

Sampling Stage: Retail

Sampler: Official sampling

Analytical Method:

Country of Origin: Spain

Sampling Type: food sample - meat

Sampling Strategy: Objective sampling

Sampling Context: Monitoring

Programme Code: ESBL MON pnI2

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Tenocillin	
	Cefotaxime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available
	Ceftazidime synergy test	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Positive/Pres ent	Positive/Pres ent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	128	128	2	16	16	64
	N of tested isolates	1	1	1	1	1	1	1	1	1	1
	N of resistant isolates	1	1	0	0	1	0	0	0	0	0
	MIC										
<=0.015											
<=0.03							1				
<=0.12								1	1		
0.12											
0.25									1		
2											
4											
8							1				
32										1	

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

Sampling Stage: Retail	Sampling Type: food sample - meat							Sampling Context: Monitoring						
Sampler: Official sampling	Sampling Strategy: Objective sampling							Programme Code: ESBL MON						
Analytical Method:														
Country of Origin: Spain														
AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	0	1	1	0	1	0	0	0	0	1	1	0	1
MIC														
<=0.03	1													
<=0.25	1													
0.25	1													
<=0.5	1													
<=1	1													
>4	1													
<=8	1													
8	1													
32	1													
>32	1													
>64	1													
>1024	1													



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

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



## Latest Transmission set

Table Name	Last submitted dataset transmission date
Antimicrobial Resistance	21-Nov-2018
Animal Population	25-May-2018
Disease Status	22-May-2018
Food Borne Outbreaks	06-Jul-2018
Prevalence	21-Jan-2019



# Malta, Text Forms 2017

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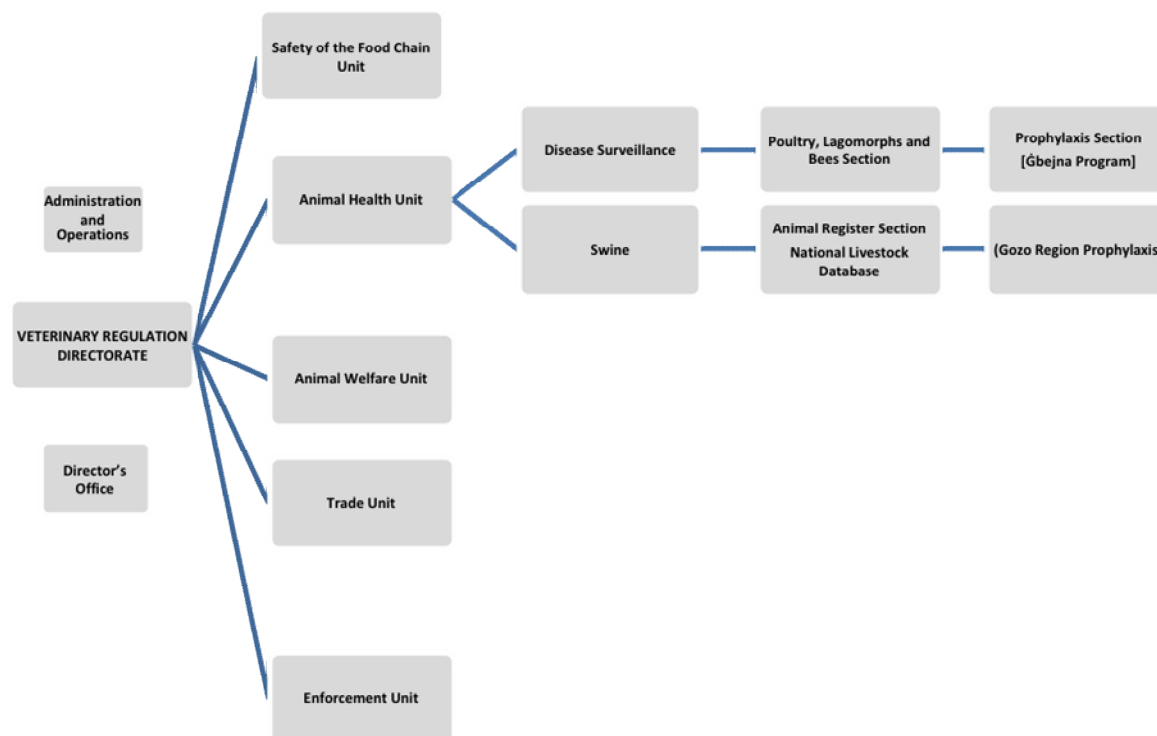
## 1. Institutions and Laboratories involved in zoonoses monitoring and reporting

The Veterinary Regulation Directorate, within the Veterinary and Phytosanitary Regulation Division (VPRD), is responsible for the activities related to animal health and food safety.

The chart below describes the structure of the Division



The chart below describes the structure of the Veterinary Regulation Directorate (VRD)



Within the Directorate the responsibilities of the eradication, surveillance and control programmes are divided as described hereunder:

A. Within the Animal Health Unit, the following sections work as follows:

- 1- Prophylaxis - responsible for collecting the samples and carry out the inspections and controls on farms according to the eradication schemes adopted for different diseases. In particular the Section is responsible for co-ordinating the sampling teams, for making appointments with the farmers and preparing daily sampling schedules, for collecting information regarding the census, for adopting proper restriction measures in case of positive results (movement restriction, culling and cleaning measures), for collaborating and ensuring restocking with brucellosis, tuberculosis, leukosis-free animals.
- 2- Animal Register- responsible for the animal Identification and Registration system (I&R), for releasing the movements permits according to the rules in place and in close connection with the Prophylaxis section, for carrying out the inspections related to I&R law and for the management of the Veterinary Information System where the animal identification and health data are stored;
- 3- Disease Surveillance- responsible for developing the eradication and control programmes according to the animal health profile of the area, for the epidemiological analysis, for controlling the effectiveness of the eradication control programmes, for organizing on farm investigations in case of suspect/confirmed positive results, for data reporting.
- 4- Poultry, Lagomorphs and Bees -primarily responsible for implementation of Salmonella control plan and other diseases related to bees and rabbits

<p>5- The swine Section is mainly responsible for managing together with Animal Register, all controls in the swine sector</p> <p>B. The National Veterinary Laboratory is part of the Division and it is responsible for carrying out the laboratory tests in accordance with time frame and methodology laid down in the control programmes, for supporting the Animal Health Unit for the epidemiological analysis, for giving proper training on correct sampling and samples transport procedure.</p>
Short description of the institutions and laboratories involved in data collection and reporting

## 2. Animal population

### 1. Sources of information and the date(s) (months, years) the information relates to<sup>(a)</sup>

The main data sources used in relation to the reporting of zoonosis is the National Livestock Database within the VRD. All data within this report pertains to 2017.

All livestock holdings are identified by a unique herd number and they are registered with Veterinary and Phytosanitary Regulation Division. All the information pertinent to each farm and bovine animal is also kept on the National Livestock database within the Veterinary Information System.

All bovine animals are identified according to the Vet. Act. S.L. 437.84, Bovine animal identification and registration, which implement the provision of Regulation 1760/2000, regarding the system for the identification and registration of bovine animals.

The system for the identification and registration of bovine animals includes the following elements:

1) The ear tags to individually identify the animals. The ear tags are applied within a period of twenty days from animal birth and in any case before the animal leaves the holding on which it was born. Any animal from another Member State retains its original ear tags if introduced in Malta.

No ear tags are removed or replaced without the permission of the Veterinary Regulation Directorate.

The ear tags are allocated to every single holding, distributed and applied to the animals by Veterinary Support Officers (VSOs) of the Animal Register Section of the Veterinary Regulation Directorate.

The responsibility of the identification and registration of the animals falls on the owner of the animals. The identification of the animals is carried out by the Veterinary Support Officers of the Veterinary and Phytosanitary Regulation Division who visit the farms at least every month or upon the request of the owners for the identification of the new animals or in case the animals have lost their tags.

2) The computerised database, (National Livestock Database) The Veterinary Regulation Directorate has established a database in accordance with Articles 14 and 18 of Directive 64/432/EC where all data

related to animal identification (id number, breed, date of birth, death) and animal movements are stored. The computerised database was declared fully operational from 1st May 2004 by the EU Commission.

3) The animal passports. The I&R system and database was recognised as fully operational and according to EU rule the passports of the animals (bovine born in Malta and not traded in other countries) are not printed anymore.

4) The herd book. A register is kept in each farm and updated with the following information regarding each animal: ear tag, date of birth, ear tag number of the mother, breed, sex, data of introduction in the farm and provenience, date of leaving from the farm and destination.

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

## **3. National changes of the numbers of susceptible population and trends**

## **4. Geographical distribution and size distribution of the herds, flocks and holdings<sup>(b)</sup>**

The Republic of Malta is an archipelago composed by three main islands called Malta (246 sq km) , Gozo (67 sq km) and Comino (2.6 sq km) with a total area of 316 km<sup>2</sup> . The islands are situated in the centre of the Mediterranean Sea east of Tunisia and south of Italy (80 km south of Sicily-Italy, 300 east of Tunisia and 350 km north of Libya). The southern and south-western coasts of the island of Malta are steep and clifflike; the northern and north-eastern sections are low and flat, with harbours. The islands are mainly flat with elevations of up to 250 m that prevail on the island of Malta. The small size does not really permit the definition of rural and urban areas, although the areas around the Grand Harbor are more urban and very few farms are present. Otherwise farms are distributed evenly throughout the islands. The same even distribution applies also to the island of Gozo. No animal production activities are undertaken on the island of Comino

## **5. Additional information**

Write text here please

(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\*: Salmonella

#### 1. History of the disease and/or infection in the country<sup>(a)</sup>

Write text here please

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

Write text here please

#### 3. Any recent specific action in the Member State or suggested for the European Union<sup>(b)</sup>

Write text here please

#### 4. Additional information

Write text here please

**\* 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*:
<b>1. Monitoring/Surveillance/Control programmes system<sup>(a)</sup></b>
Write text here please
<b>2. Measures in place<sup>(b)</sup></b>
Write text here please
<b>3. Notification system in place to the national competent authority<sup>(c)</sup></b>
Write text here please
<b>4. Results of investigations and national evaluation of the situation, the trends<sup>(d)</sup> and sources of infection<sup>(e)</sup></b>
Write text here please
<b>5. Additional information</b>
Write text here please
<p><b>* 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</b></p> <p>(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, 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.</p> <p>(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.</p> <p>(c): Mandatory: Yes/No.</p> <p>(d): Minimum five years.</p> <p>(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).</p>

## 5. General evaluation\*: Brucellosis

### 1. History of the disease and/or infection in the country<sup>(a)</sup>

The first national programme for *Brucella abortus* and *Brucella melitensis* control initiated in the 50's and became compulsory in 1961. In 1973 the island of Gozo was submitted to a test and slaughter programme. The main problem was found within the sheep and goat population where 21% of goats and 5.2% of the sheep on the island were infected. Only 0.5% of the cattle on the island were positive. By 1980 Gozo had only 0.1% of goats positive while there were no cases in either bovine or ovine animals.

As limited funds were available for an eradication programme in Malta in the early 80's the Maltese Veterinary Services allowed the use of the 45/20 vaccine for cattle herds either had non active infection or were contiguous to an infected farm, during this period 8% of cattle in the island of Malta were infected. Farmers were also assisted to voluntary slaughter of infected animals.

In 1983 a survey was carried out which showed that 12% of goats and 5% of sheep were infected in the whole Country.

In 1987 funds were made available for the eradication of both *Brucella abortus* and *Brucella melitensis* and bovine tuberculosis. Another survey carried out on those farms supplying milk for pasteurization showed a prevalence of 2% of bovine animals, 9% of goats and 1% of sheep were infected.

In view of this situation a more strict approach was taken from the late 80's by the adoption of a new control scheme with the the following measures:

- Legislation was amended including the compulsory registration of all dairy animals, more powers was given to the Veterinary Services and the control of movement of all dairy animals was implemented.
- A public awareness campaign had the beneficial results that over 1000 previously unknown small ruminant holdings were registered.
- No movement of animals except for slaughter was allowed in the first three months of the new control scheme.
- All animals were identified by tagging and freeze branding and tested in the first 12 months from the start of the programme.
- All farms with more than 10% positive animals were depopulated within the first 8 months of the scheme. Depopulated farms were cleaned and left empty for six months.
- Testing on infected farms was carried out at 3 month intervals.
- Reactors were slaughtered not later than 14 days following a positive test result.
- Accredited herds were tested twice yearly.
- Compensation in the form of replacement animals was given for bovine animals slaughtered within the scheme while financial compensation was given in the case of sheep and goats.

From 2005 a more strict brucellosis control plan has been implemented which included the twice yearly testing of bovine, ovine and caprine animals by the Rose Bengal test (RBT), the adoption of ELISA (from



2010) and Complement Fixation test for all RBT positive reactors, the slaughtering and tissues lifting for culture of all the positive animals and the adoption of the Milk Ring test three times a year on all dairy herds.

Due to this strict control programme adopted during the recent years based on test and culling principle, together with strict control on animal movements, the prevalence of the disease in animal was drastically reduced with a connected reduction of human cases in the islands. The detailed prevalence detected in the recent years is described in the dedicated chapter. No human case has been detected from 1999.

Malta achieved the Brucella officially free status in 2015

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

Write text here please

## 3. Any recent specific action in the Member State or suggested for the European Union<sup>(b)</sup>

Not applicable

## 4. Additional information

Write text here please

### \* 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

## 6. Description of Monitoring/Surveillance/Control programmes system\*: Brucellosis

### 1. Monitoring/Surveillance/Control programmes system<sup>(a)</sup>

#### Active surveillance

The testing regime followed is in accordance to Council Directive 64/432. All bovine animals over one year old, with the exception of males for fattening, are subjected to two serological tests within 12 months at an interval of at least 3 months to obtain the officially brucellosis free status.

According to the EU legislation, since the prevalence of the disease within the bovine herds is <1%, all the officially brucellosis-free herds may be controlled annually for the purpose of maintaining the health status with one serological test carried out on all bovine animals over 12 months old, with the exception of males for fattening. Considering the regular presence in the Maltese dairy farms of separated units where male bovine animals are reared for fattening, a control scheme which is more strict than the requirements of Dir.64/432 to maintain the free status with the purpose to exclude any possible transmission of the disease from bovine animals reared in fattening separated units within the dairy farms. The males for fattening are not always tested on farm because of the safety of the personnel in charge for the controls.

The control scheme adopted includes:

- a) The serological control every six months of all animals over 12 months old, with the exception of males for fattening if dangerous for the safety of the personnel in charge for the sampling. In the years 2008-2014 the control was extended to all animals over 6 months old;
- b) The serological control at the slaughterhouse of all the bovine animals over 12 months old, including the males for fattening.
- c) Bulk milk test performed three times a year, at an interval of at least three months, in the dairy herds

The Rose Bengal test (RBT) is used for the serological analysis. Following a positive result to the Rose Bengal test the sample is retested using the ELISA method and if still positive the Complement Fixation test (CFT) is used as confirmatory test. Blood samples containing 20 or more ICFT units /ml are considered as brucella positive. Those animals resulting positive to CFT are slaughtered. The brucella free status of the holding is suspended and all movement of susceptible animals are prohibited, except for slaughter under the supervision of the Veterinary Regulation Directorate.

Positive animals are slaughtered and samples are collected at the slaughterhouse for the bacteria culture. According to the EU legislation, the CVO may authorize the isolation of the positive animal and the performing of another serological control after 15 days with CFT.

The bulk milk is tested using the milk ring test. In case of positivity all the animals over 12 months old are immediately re-controlled by serological tests (Rose Bengal test).

In positive farms where the bacteria culture has identified the presence of B.abortus, the following measures are adopted: no movements of susceptible animals are allowed from/to other farms,

movements to slaughterhouses are allowed with authorisation issued by VRD, milk of any positive animal is considered not fit for human consumption, manure is disinfected and used after 3 weeks of maturation, a cleaning and disinfection protocol is adopted, all the dogs present in the farm are serologically tested. An epidemiological inquiry is carried out to investigate on recent movement of animals and if deemed necessary, other herds are tested. The infected herd is not considered as officially brucellosis- free until all animals result negative to two serological consecutive tests carried out at an interval of at least three months with the first test performed 30 days after the removal of the positive animals. The Department of Public Health is immediately informed in case of positive results at confirmatory test for the necessary actions in order to prevent the possible infection of people in contact with the animals.

Protocols in case of suspicion and confirmation of the disease are described in annexes 1 and 2.

#### Passive surveillance

The early detection system for all the notifiable diseases is based on a regular awareness programme. The Veterinary Regulation Directorate organizes regular trainings for official veterinarians, produces leaflets for farmers and holds regular meeting with farmer Associations with the aim of improving the awareness against the diseases with most relevant risk.

From the year 2012 an emergency service has been implemented to improve general welfare issues, to improve the passive surveillance on animal diseases and to limit the possible spread of dangerous pathogens. Animals with clinical signs of infective diseases are visited by Official Veterinarians and if an infectious disease is suspected the animals are tested and killed on farm. The carcasses are disposed with proper procedure to avoid the spread of infective agents. This system is strengthened by a 24/7 system of emergency service on farm. Every time a livestock keeper reports via telephone call an animal in need of slaughter, but not in a condition to be transported, or animals with clinical signs related to dangerous diseases, the emergency service is activated and the official veterinarian on duty visits the farm and carries out an inspection on the animals. The number of requests for emergency service reported, including cattle, small ruminants and pigs, is the following: nr. 77 in the year 2012 with 82 animals visited by official veterinarians.; nr. 182 with 219 animals visited in the year 2013; nr. 238 with 284 animals visited in the year 2014

The improvements on passive surveillance allowed to detect in 2013 an outbreak of Q fever in a herds with dairy cattle, sheep and goats where the farmer notified the presence of abortions. The presence of brucellosis was escluded by the testing of placenta and foetuses and by testing the animals present. The tests detected the infection by *Coxiella burnetii*.

#### Qualifications of animals and herds

According to the Legal Notice 314/2005 Chapter 437 of the Veterinary Services Act, "Measures for the Eradication of Brucellosis, Tuberculosis and Leucosis in cattle rules" the plan for the eradication of bovine brucellosis is drawn in accordance with the European Union Council Directive 64/432/EEC.

A bovine herd is declared officially brucellosis free if:

- all the bovine animals have been free from clinical signs of brucellosis for at least six months; and

- all the bovine animals over 12 months old, with the exception of males for fattening not used for breeding (if dangerous for the safety of personnel in charge for sampling), have been subjected to two serological tests with negative results at an interval of more than three months and less than 12 months ;

A bovine herd maintains the officially brucellosis free status if:

- all the bovine animals have been free from clinical signs of brucellosis; and
- all the animals entering the holding come from an officially brucellosis free herds; and
- all the bovine animals over 12 months old, with the exception of males for fattening not used for breeding (if dangerous for personnel in charge for sampling), have been controlled with negative results and according to the following protocol:

#### DAIRY FARMS:

- a) 2 serological tests carried out at intervals of 12 months with negative results (one test every 6 months);
- b) 3 milk ring tests carried out at intervals of at least 3 months

#### SLAUGHTERED ANIMALS:

A serological test is carried out on all the animals older than 12 months, including males for fattening, slaughtered at the civil abattoirs of Malta and Gozo. Most of the time also animals younger than 1 year are sampled and tested for brucellosis.

The tests on slaughtering animals have the purpose to check the fattening bulls which are reared in dairy herds and in non-milk producing farms that can be difficult to restrain. These animals are reared in separated units but could have been in indirect contact with reproductive animals reared in the same farm or illegally mixed with dairy animals.

#### Tests used and sampling schemes

Testing is carried out in accordance to the provisions laid down in Council Directive 64/432.

Serological testing. Testing is carried out by the National Veterinary Laboratory using the Rose Bengal plate test as a screening test, while the complement fixation test is carried out as a confirmatory test on all RBT positive samples. A second serological test (ELISA) was implemented in 2010 to carry out analysis on RBT positive samples before the Complementary Fixation tests. The ELISA test is carried out immediately after the positive result on RBT. Animals are considered as confirmed positive to brucella infection if the complement fixation tests results in 20 or more ICFT units / ml.

Milk testing. All herds that supply milk for human consumption are tested with bulk milk test three times a year, at an interval of at least three months. In case of any positive reaction to the milk ring test, the whole herd is tested through the Rose Bengal plate test. Any positive Rose Bengal test has to be confirmed through the complement fixation test as stated above.

#### Measures in case of a positive results

Once a positive animal is identified and the positive result confirmed with CFT, a ban of movements for the herd where the animal is reared is issued by the CVO. The officially brucellosis free status of the herd is suspended and any positive animal is isolated and slaughtered within 15 days. The health status of the farm is updated in the Veterinary Information System. According to the EU legislation, the CVO may authorize the isolation of the positive animal and the performing of another serological control after 15 days with CFT.

Samples are collected at the slaughterhouse from the positive animals for the bacteria culture and depending on the result two different procedures are possible:

- 1- Bacterial culture NEGATIVE: the officially brucellosis free status is maintained as suspended. All the animals of the herd over 12 months old are tested with a test carried out 30 days after the removal of the positive animals. If there is no evidence of other positive animals, the officially brucellosis free status of the herd is restored.
- 2- Bacterial culture POSITIVE: the officially brucellosis free status of the herd is withdrawn. All the animals of the herd over 12 months old are tested with two consecutive tests, the first 30 days and the second after 90 days after the removal of the positive animals. If there is no evidence of other positive animals, the status of the herd is re-established as officially brucellosis free. The herd is then tested 4 months after the removal of the positive animals to confirm the absence of infection.

In case of the presence of animals which are pregnant at the time of the outbreak, a control is carried out 30 days after the last animal has calved.

In case of isolation of *Brucella abortus* the following measures are adopted in the herd:

- an inspection of the holding is carried out to identify any relevant recommended measure for hygiene and proper management and to establish cleaning and disinfection measures;
- all the dogs present in the farm are controlled for brucellosis with a serological test;
- the manure is disinfected and its use authorised not earlier than 3 weeks;
- any milk from sero-positive animals present in the farm is be deemed as unfit for human consumption and destroyed;
- an investigation is carried out on recent movements of animals from the brucella-infected farm to other farms. In such cases were deemed necessary other farms are tested;
- an epidemiological enquiry is carried out to identify the source of the infection;
- a notification is immediately forwarded to the Public Health Department;

## 2. Measures in place<sup>(b)</sup>

No vaccination has been carried out on local bovine herds since 1980.

Detailed guidelines for good husbandry practices and biosecurity measures on bovine farms are not available. However, general guidelines are covered in the Code of Good Agriculture Practice (Cogap).

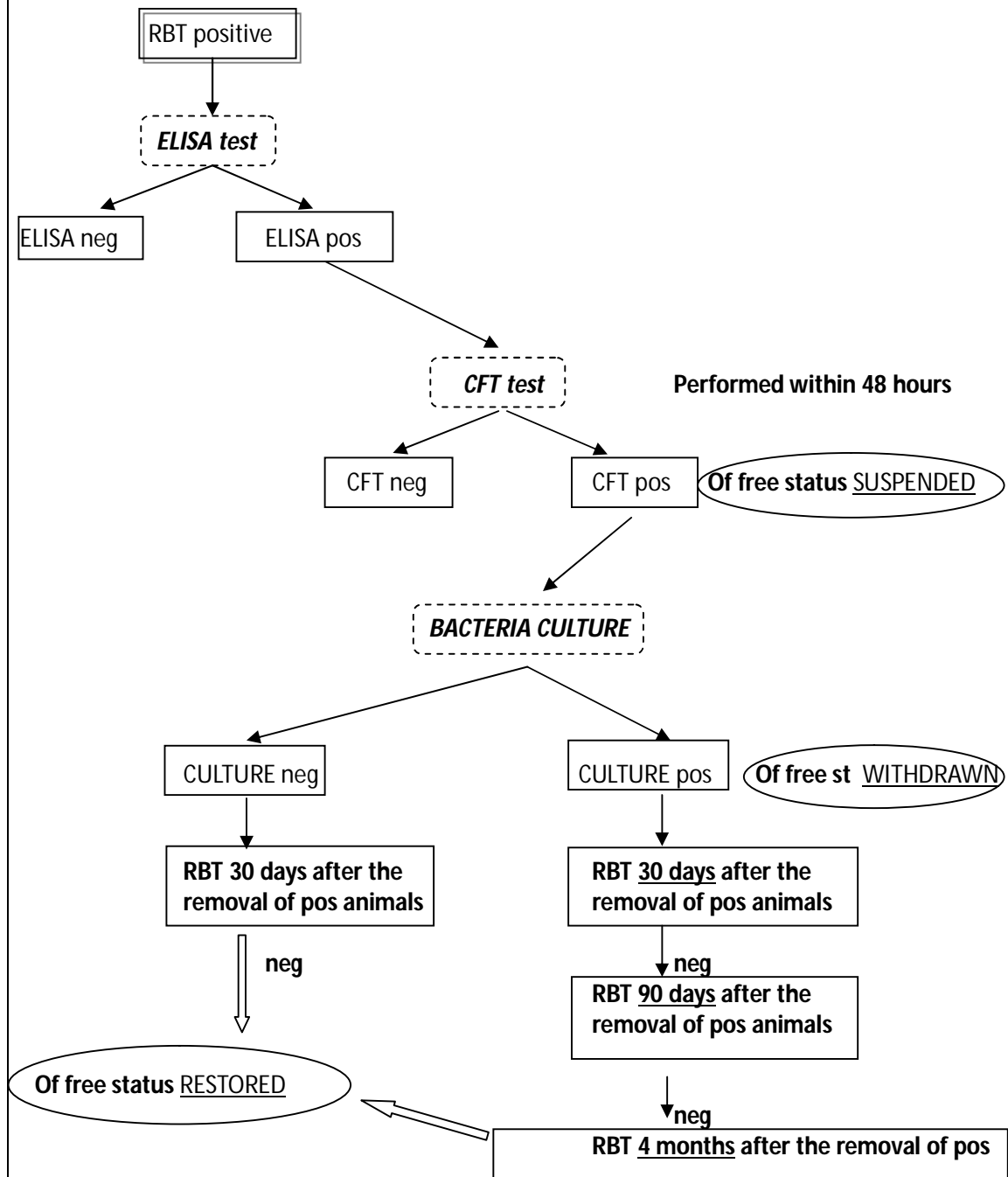
It covers certain practices such as:

- the guidelines for storage of feed
- the quality of building material
- need for a vehicle disinfection pits
- necessity of a manure clamp

All farms producing manure have to store solid manure in an enclosed place known as the manure clamp, for six months a year (from the 15th October to 15th March). All farms are to have a leak proof cesspit, to collect foul water arising from cleaning etc. The manure clamp is to be connected to the cesspit. The water is kept for 15 days then collected by a bowser. These regulations serve to reduce the environmental pollution and the nitrate level in fields fertilised with manure. However, they also provide a tool to permit biosecurity measures to limit spread of diseases.

The biosecurity level of the dairy farms has been improved in recent years due to an informative campaign performed by the VRD staff and during the inspections performed on farms for controlling milk hygiene, animal health, feed hygiene, drugs use practice, and animal welfare.

PROTOCOL in CASE of POSITIVITY



<b>3. Notification system in place to the national competent authority<sup>(c)</sup></b>
Yes
<b>4. Results of investigations and national evaluation of the situation, the trends <sup>(d)</sup> and sources of infection<sup>(e)</sup></b>
<p>Positive results in the past 6 years</p> <p>In 2009 the officially brucellosis free status has been withdrawn in one herd following a positive result obtained to RBT and CFT. The herd was submitted to a testing regime to identify the possible presence of infection with favourable results and the health status was re-assigned during the year.</p> <p>In 2009 a sample had been found positive in a control carried out on 09.03.2009 in a dairy farm of 439 bovine animals (1 positive out of 326 animals tested). The sample was submitted to CFT test on 15.03.2009 and the positivity confirmed. Because of a communication problem the samples for bacteria culture were not collected at the slaughterhouse and thus no culture results were available. The animals of the herd were submitted to two further controls before the health status was restored.</p> <p>National legislation</p> <p>The relevant legislation is mentioned below, and is the legislation that provides the legal basis for all the measures included in the brucellosis control programme. All the regulations are available in the Justice Service of the Maltese Government at the following link <a href="http://www.justiceservices.gov.mt">http://www.justiceservices.gov.mt</a></p> <p>A) Veterinary Services Act Cap.437 of 1<sup>st</sup> February 2002 (<i>ACT XXIII of 2001, as amended by Act XVIII of 2002; Legal Notice 426 of 2007; and Act XXIII of 2009</i>).</p> <p>The regulation establishes and consolidates the general requirements in the veterinary field, veterinary medicinal products, feeding stuffs and zootechnical requirements and the regulation of the veterinary profession. It gives the power to the VPRD to prescribe the general rules concerning the prevention and control of diseases, the health conditions to be observed in relation to the movement of live animals and germinal products, the identification of the animals, the importing condition of animals and animal products, the veterinary inspections, the financial and compensatory measures in connection with national schemes for eradication of animal diseases, the obligations of animal keepers, the certifications.</p> <p>According to the rules laid down in the Veterinary Services Act the bovine brucellosis is included in the list of the diseases for which the owner, the keeper, the dealer or the importer, the consignee, the carrier, the retailer or any other person authorised to dispose of live animals, products of animal origin, animal feedingstuffs or veterinary medicinal products or the representative of such persons, or any person in charge of a private veterinary activity must observe any obligation imposed and implement the rules mentioned hereunder:</p> <ul style="list-style-type: none"> <li>- co-operate and assist in the control of the disease;</li> <li>- observe the obligations imposed by the veterinary services, in the case of a suspected outbreak</li> </ul>



including any obligation concerning the restriction of movement of animals and humans, the slaughtering of animals, the destruction of animal products, feeding stuffs and equipment, and the cleaning and disinfection of premises, material and equipment;

- identify and register animals and declare the movements of animals for which they are responsible;
- keep individual registers for each holding for which they are responsible;
- observe the health conditions in connection with the movements of live animals;
- produce, at the request of any officer of the veterinary services, the necessary certificates or documents;
- declare and notify to the veterinary services any suspected outbreak of the disease;
- shall not place in a holding or on the market, recognised as being officially free of brucellosis, any animal which is not covered by the proper guarantees;
- shall not accept in a holding, centre or organisation, or on the market, recognised as being officially brucellosis free, any animal which is not covered by guarantees, to show that such animal is free from brucellosis;

B) Veterinary Act- Subsidiary Legislation 437.86 (*Legal notice 314 of 2005 as amended by LN 2008 of 2009*): measures for the eradication of brucellosis, tuberculosis and leucosis in cattle rules.

The regulation implements the rules contained in the European Union Council Directive 77/391/EEC concerning the introduction of Community measures for the eradication of brucellosis, tuberculosis and leucosis in cattle and lays down rules to improve the animal health status of cattle. For the purpose of these rules the Competent Authority shall draw up plans for accelerating the eradication of brucellosis. The plan for accelerating the eradication of bovine brucellosis are devised by the competent authority so that herds may be classed as "officially brucellosis-free", in accordance with community law, and in particular European Union Council Directive 64/432/EEC on animal health problems affecting intra-Community trade in bovine animals and swine, as last amendments. The plan lists the measures to be taken to accelerate and intensify the eradication of bovine brucellosis and specifies the measures to combat and prevent this disease.

According to this legislation the programme drawn and implemented includes:

- the description of herds subject to control measures, and of herds with confirmed bovine brucellosis;
- the total numbers i) of animals subject to control measures; ii) of animals with suspected brucellosis or considered to be infected; iii) of infected animals; iv) of animals slaughtered within the programme;
- the scheduled duration of the initial eradication programmes and of the accelerated plans;
- the method applied for checking on the effective application of the accelerated plans;
- the national budgetary allocation for the eradication of bovine brucellosis and the breakdown by items of these allocations

C) Prevention of Disease Ordinance, Chapter 36 of the laws of Malta, section 68, (*Enacted by ORDINANCE VIII of 1908 and following amendments*) states that every person having in his possession

or under his charge an animal affected with brucellosis shall:

- as far as practicable keep that animal separate from other animals not so affected; and
- with all practicable speed, give notice of the fact of the animal being so affected, to an officer for the district wherein the animal so affected is.

The officer, to whom any such notice is given, shall forthwith give the information to the Competent Authority.

Identification of animals and registration of holdings:

The rules for animal identification and registration of herds and animals are stated in the following regulations:

- Veterinary Services Act, section 7 (*ACT XXIII of 2001, as amended by Act XVIII of 2002; Legal Notice 426 of 2007; and Act XXIII of 2009*);
- Vet. Serv. Act. 437.78, identification and registration of animals rules, (*Legal Notice 292 of 2005*);
- Milking Animals Regulation S.L. 36.32 section 3 (*Legal Notice 151 of 1989*);
- European Union Act, Chapter 460 of the laws of Malta, section 3-4 (*ACT V of 2003, as amended by Act III of 2006; Legal Notice 427 of 2007; and Act VII of 2012*);
- Regulation (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products and repealing Council regulation (EC) No 820/97;
- Council Directive 92/102/EEC of 27 November 1992 on the identification and registration of animals (*amended by OJ L 005 09.01.2004 p.8*);
- Control of marking of animals regulation S.L. 36.17 sections 2-3, (*Government Notice 563 of 1957, as amended by Legal Notice 35 of 1964*);
- Undulant fever (prevention) regulation S.L. 36.04 section 4, (*Government Notice 50 of 1924*)

All livestock holdings are identified by an unique herd number and they are registered with Veterinary and Phytosanitary Regulation Department. All the information pertinent to each farm and bovine animal is also kept on the National Livestock database within the Veterinary Information System.

All bovine animals are identified according to the Vet. Act. S.L. 437.84, Bovine animals identification and registration, which implement the provision of Regulation 1760/2000, regarding the system for the identification and registration of bovine animals.

The system for the identification and registration of bovine animals includes the following elements:

1) The ear tags to individually identify the animals. The ear tags are applied within a period of twenty days from animal birth and in any case before the animal leaves the holding on which it was born. Any animal from another Member State retains its original ear tags if introduced in Malta.

No ear tags are removed or replaced without the permission of the Veterinary Regulation Directorate.

The ear tags are allocated to every single holding, distributed and applied to the animals by Veterinary Support Officers (VSOs) of the Animal Register Section of the Veterinary Regulation Directorate.

The responsibility of the identification and registration of the animals falls on the owner of the animals. The identification of the animals is carried out by the Veterinary Support Officers of the Veterinary and Phytosanitary Regulation Department who visit the farms at least every month or upon the request of the owners for the identification of the new animals or in case the animals have lost their tags.

2) The computerised database. The Veterinary Regulation Directorate has established a database in accordance with Articles 14 and 18 of Directive 64/432/EC where all data related to animal identification (id number, breed, date of birth, death) and animal movements are stored. The computerised database was declared fully operational from 1st May 2004 by the EU Commission.

3) The animal passports. The I&R system and database was recognised as fully operational and according to EU rule the passports of the animals (bovine born in Malta and not traded in other countries) are not printed anymore.

4) The herd book. A register is kept in each farm and updated with the following information regarding each animal: ear tag, date of birth, ear tag number of the mother, breed, sex, data of introduction in the farm and provenience, date of leaving from the farm and destination.

In case of the finding of a not identified animal in a farm, a blood sample is collected and tested for brucellosis and leukosis and an intradermal tuberculosis test is performed. A notification is immediately sent to the Animal register Section of VRD for further actions.

In order to verify the compliance with I&R rules, inspections on farms are regularly carried out according to the provisions of Reg.1760/00. The outcomes are reported in the annual reports of the VPRD.

#### Rules on the animal movements

Movement rules are established for the prevention of the spread of diseases among animal population. The national legislation for this purpose is the following:

- Prevention of Disease among animals, S.L. 36.20 sections 16-17 (*LEGAL NOTICE 63 of 1967, as amended by: Legal Notice 52 of 1972; Act XIII of 1983; and Legal Notices 59 of 1998 and 407 of 2007*);
- Measures for the Eradication of Brucellosis, Tuberculosis and Leucosis in cattle rules – SI 437.86 (*LEGAL NOTICE 314 of 2005, as amended by Legal Notice 208 of 2009*);
- Foot and Mouth Disease regulation -S.L. 36.05, section 4 (*GOVERNMENT NOTICES 103 of 1932 and 457 and 554 of 1937*);
- Control of Foot and Mouth disease regulation- S.L. 36.27 section 2 (*LEGAL NOTICE 74 of 1975*);
- Undulant fever (prevention) regulation -S.L. 36.04 section 7 (*GOVERNMENT NOTICE 50 of 1924*);

No bovine and ovi-caprine animals on the Islands can be moved without a permit issued by the Animal Health Unit of the Veterinary Regulation Directorate. According to Legal Notice 314/2005 Chapter 437 of the Veterinary Services Act, "Measures for the Eradication of Brucellosis, Tuberculosis and Leucosis in cattle rules" no movement of male animals are allowed from non-dairy farms to dairy farms irrespective of disease status.

All animal movements including farm to farm, farm to abattoir and temporary movements such as

movements to shows have been prohibited without a movement permit obtained from the official competent authority (Veterinary Regulation Directorate) and based on the health status of the holding. Movements from herds of male for fattening only to dairy farms are not allowed according to the national legislation (*LEGAL NOTICE 314 of 2005, amended by Legal Notice 208 of 2009*).

If an animal results positive to both the screening test Rose Bengal test (RBT) and ELISA and to the confirmatory test (CFT), the holding is declared as brucella-infected and no movement is permitted from the holding without the permission of the CVO. The only permits issued would be to allow movement of brucella-positive animals and other animals from the holding to the civil abattoirs of Malta or Gozo for slaughter. The civil abattoirs are the only abattoirs in the country.

The herd is considered as officially brucella-free only until measures taken according to a specific protocol have excluded the presence of the infection in the herd (see annex 1 and 2). Once this is the case, movement restrictions are lifted.

A file is kept for each farm at the VRD level with all the permits issued and all animal movements are registered in the National Livestock Database. On request of any sort of movement or purchase transfer the file is brought up.

Target animals and animal population:

The animal population present in the Maltese islands susceptible to *Brucella abortus* infection is composed by 14,427 bovine animals in 266 farms.

- 98 dairy farms with 10,912 animals
- 168 farms of fattening animals with 3515 animals.
- Around 4,000 bovine animals are slaughtered every year (4,313 during 2017).

The target population for the brucellosis control programme is composed by bovine animals over 12 months old reared for breeding present in dairy and non-dairy farms.

#### Description of the brucellosis eradication programme

Even though the absence of the disease has been confirmed by controls performed during the recent years, during the last 5 years it was decided to maintain a high level of testing to assure an earlier detection of the possible incursion of the disease in the herds and maintain a high level of confidence in disease freedom.

The main objective of the programme is to maintain the officially brucellosis free status of the herds in order to guarantee the safety of the dairy productions and of the human health. The programme covers the islands of Malta and Gozo which are considered as one region for the purpose of this programme. In the Island of Comino animal herds are not present.

## MEASURES in POSITIVE HERDS

### Suspicion

Complementary Fixation Test. In case of positive result (20 or more ICFT units / ml)\_the following measures are adopted on the herd:

- the positive animal is isolated and slaughtered (possibly within 15 days) and tissues lifted for bacteria culture and PCR.
- no movements of susceptible animals are allowed from/to other farms
- movements to the slaughterhouses are allowed with the authorization issued by CVO. The Veterinary officer of the slaughterhouse is informed for the proper collection of tissue from sero-positive animals;
- milk of any positive animal present on farm is considered not fit for human consumption

The officially brucellosis free status of the herd is SUSPENDED. The health status of the farm is updated in the Veterinary Information System.

According to the EU legislation, the CVO may authorize the isolation of the positive animal and the performing of another serological control after 15 days with CFT.

The date of slaughtering is agreed between the farmer and the VRD and the movement certificate is issued by a veterinary officer of the Animal Health Unit who informs the veterinary in charge for the post mortem inspection at the slaughterhouse.

At the slaughterhouse proper samples are collected (mammary and genital lymph nodes and spleen) and sent to the Veterinary Laboratory for the bacteria culture.

### Confirmation

Samples are collected at the slaughterhouse from the positive animals for the bacteria culture and depending on the result two different procedures are possible:

- 1- Bacterial culture NEGATIVE: the officially brucellosis free status is maintained as suspended. All the animals of the herd over 12 months old are tested with a test carried out 30 days after the removal of the positive animals. If there is no evidence of other positive animals, the officially brucellosis free status of the herd is restored.
- 2- Bacterial culture POSITIVE: the officially brucellosis free status of the herd is WITHDRAWN. All the animals of the herd over 12 months old are tested with two consecutive tests, the first 30 days and the second after 90 days after the removal of the positive animals. If there is no

evidence of other positive animals, the status of the herd is re-established as officially brucellosis free. The herd is then tested 4 months after the removal of the positive animals to confirm the absence of infection.

In case of the presence of animals which are pregnant at the time of the outbreak, a control is carried out 30 days after the last animal has calved.

In case of positive bacteria culture/PCR the following measures are implemented:

- no movements of susceptible animals are allowed from/to other farms;
- movements to slaughterhouses are allowed with authorisation issued by VRD;
- milk of any other positive animal is considered not fit for human consumption;
- manure is disinfected and used after 3 weeks of maturation;
- a cleaning and disinfection protocol is adopted;
- all the dogs present in the farm are serologically tested;
- epidemiological enquiry is carried out;
- the Public Health Department is informed.

An order is issued to the farmer to guarantee the respect of the above measures.

## 5. Additional information

Write text here please

**\* 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, 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).

## 7. General evaluation\*: Tuberculosis

### 1. History of the disease and/or infection in the country<sup>(a)</sup>

Write text here please

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

Write text here please

### 3. Any recent specific action in the Member State or suggested for the European Union<sup>(b)</sup>

Write text here please

### 4. Additional information

Write text here please

#### \* 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

## 8. Description of Monitoring/Surveillance/Control programmes system\*: Tuberculosis

### 1. Monitoring/Surveillance/Control programmes system<sup>(a)</sup>

#### Description of the tuberculosis eradication programme

Even though the absence of the disease has been confirmed by controls performed during the recent years, during the last 6 years it was decided to maintain a high level of testing to assure an earlier detection of the possible incursion of the disease in the herds and maintain a high level of confidence in disease freedom.

The main objective of the programme is to maintain the officially tuberculosis free status of the herds in order to guarantee the safety of the dairy productions and of the human health. The programme covers the islands of Malta and Gozo which are considered as one region for the purpose of this programme. In the Island of Comino animal herds are not present.

#### Active surveillance

The testing regime followed is in accordance to Council Directive 64/432. All bovine animals over 6 weeks old, with the exception of males for fattening, are subjected to two intradermal comparative tuberculin tests within 12 months at an interval of at least 6 months to obtain the officially free status. Considering the regular presence in the Maltese dairy farms of separated units where male bovine animals are reared for fattening, it was adopted from 2009 to 2014 a control scheme that is more strict than the requirements of Dir.64/432 to maintain the free status of the herds with the purpose to exclude any possible transmission of the disease from bovine animals reared in fattening separated units within the dairy farms. The scheme included controls on dairy farms every 6 months carried out on animals over 6 weeks old. The males for fattening are not tested on farm because of the safety of the personnel in charge for the controls.

The control scheme of the bovine tuberculosis eradication programme includes:

- a) The intradermal comparative tuberculin test performed every six months on all animals over 6 weeks old (with the exception of males for fattening);
  - b) The post mortem inspection to detect the presence of tuberculosis visible lesions carried out at the slaughterhouse on all the bovine animals slaughtered, including males for fattening.
- The skin test used as routine test is the intradermal comparative test with one injection of bovine tuberculin and one injection of avian tuberculin given simultaneously. This test is regularly used in all the controls performed on farms.
- If goats are reared together with bovine, all the animals over 6 weeks older are submitted to an intradermal comparative tuberculin test.

#### Qualifications of animals and herds

According to the Legal Notice 314/2005 Chapter 437 of the Veterinary Services Act, "Measures for the Eradication of Brucellosis, Tuberculosis and Leucosis in cattle rules" the plan for the eradication of bovine tuberculosis is drawn in accordance with the European Union Council Directive 64/432/EEC.

A bovine herd is declared officially tuberculosis free if:

- all the bovine animals are free from clinical signs of tuberculosis; and
- all the bovine animals over 6 weeks old, with the exception of males for fattening not used for breeding, have been subjected to two intradermal tuberculin tests with negative results at an interval of six months;

A bovine herd maintains the officially tuberculosis free status if:



- all the bovine animals are free from clinical signs of tuberculosis; and
- no visible lesion is detected at the post mortem inspection on animals of the herd;
- all the animals entering the holding come from herds with officially tuberculosis free status; and
- all the bovine animals over 6 weeks old, with the exception of males for fattening not used for breeding, are subjected to two intradermal tuberculin tests with negative results and according to the following protocol:

#### DAIRY FARMS

- a) 2 intradermal comparative tuberculin tests carried out at intervals of 6 months with negative results.

#### SLAUGHTERED ANIMALS

A post mortem inspection is carried out on all the animals, including males for fattening, slaughtered at the civil abattoirs of Malta and Gozo, in order to detect the presence of tuberculosis visible lesions.

#### Tests used and sampling schemes

Testing is carried out in accordance to the provisions laid down in Council Directive 64/432.

Intradermal tuberculin test. Testing is carried out by the Animal Health Unit, Prophylaxis Section of the Veterinary Regulation Directorate. For safety reasons the intradermal tuberculin test is not carried out on male for fattening. The test procedure used is in line with the procedures described in Annex B of Dir. 64/432.

The skin test used as routine test is the intradermal comparative tuberculin test with one injection of bovine tuberculin and one injection of avian tuberculin given simultaneously.

The reading of the results is performed after 72 hours according to the following rules:

- a) Positive: bovine reaction more than 4mm greater than the avian reaction;
- b) Inconclusive: bovine reaction between 1-4mm greater than the avian reaction
- c) Negative: no reaction can be seen or bovine reaction equal to the avian reaction

Post mortem inspection. All the animals slaughtered are submitted to a post mortem inspection in accordance with the procedure of the Reg. 854/04 of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption. In case of presence of visible lesions samples are collected from abnormal lymph nodes and organs with lesions. In case that animals with positive intradermal reaction are slaughtered and no visible lesions are present, samples from retropharyngeal, bronchial, mediastinum, supramammary, mandibular, mesenteric lymph nodes and liver are collected and submitted to bacterial culture and PCR. Measures in case of positive or inconclusive results

In case of inconclusive result to the intradermal comparative tuberculin test, the reactor is submitted to another comparative skin test after 42 days. The animal cannot move from the holding but the officially tuberculosis free status of the herd it is not suspended. If at the second intradermal tuberculin test the animal continues to give inconclusive result or if it gives positive result, the animal is considered positive, it is slaughtered and tissues are lifted for bacteria culture and PCR.

Once an animal has a positive reaction to the intradermal comparative test, the officially tuberculosis free status of the herd is suspended and the positive animal is isolated, the milk produced by the animal is deemed as unfit for human consumption, no movement of susceptible animals are allowed from the farm and the reactor is isolated and possibly slaughtered within 30 days. The health status of the farm is immediately updated in the Veterinary Information System.

According to the EU legislation, the CVO may authorize the isolation of the positive animal and the performing of another intradermal comparative test after 60 days.

The officially tuberculosis free status is suspended also if visible lesions are detected during the normal post-mortem inspection at the slaughterhouses.

Tissues are lifted from positive reactors for the bacteria culture and PCR at the post-mortem inspection.

Depending on the result two different procedures are possible:

1- PCR NEGATIVE: the officially tuberculosis free status is maintained as suspended. All the animals of the herd over 6 weeks old are tested with a intradermal comparative tuberculin test carried out 60 days after the removal of the positive animals. If there is no evidence of other positive animals, the officially tuberculosis free status of the herd is restored.

2- PCR POSITIVE: the officially tuberculosis free status of the herd is withdrawn. All the animals of the herd over 6 weeks old are tested with two consecutive intradermal tuberculin tests, the first 60 days and the second 4 months after the removal of the positive animals to confirm the absence of infection. If there is no evidence of other positive animals, the status of the herd is re-established as officially tuberculosis free.

In case of isolation of *Mycobacterium bovis* the following measures are adopted in the herd:

- an inspection of the holding is carried out to identify any relevant recommended measure for hygiene and proper management and to establish cleaning and disinfection measures;
- the calves of the positive reactors are isolated and tested after 42 days;
- the manure is disinfected and its use authorised not earlier than 5 months;
- an investigation is carried out on recent movements of animals from the tuberculosis-infected farm to other farms. In such cases were deemed necessary other farms are tested;
- an epidemiological enquiry is carried out to identify the source of the infection;
- a notification is immediately forwarded to the Public Health Department;

Fattening units. If visible lesions are detected during post mortem examination on male for fattening and the presence of *M. bovis* is confirmed, the holding where the animals are reared must be emptied within 6 months from the positive result in order to carry out cleaning and disinfection procedure or in alternative submitted to two intradermal tuberculin tests with an interval of at least 60 days.

Protocols in case of suspicion and confirmation of the disease are described in annexes 1 and 2.

Information and assessment on bio-security measures, management and infrastructure in place in the holdings under control:

Detailed guidelines for good husbandry practices and biosecurity measures on bovine farms are not available. However, general guidelines are covered in the Code of Good Agriculture Practice (Cogap).

It covers certain practices such as:

- the guidelines for storage of feed
- the quality of building material
- need for a vehicle disinfection pits
- necessity of a manure clamp

All farms producing manure have to store solid manure in an enclosed place known as the manure clamp, for six months a year (from the 15th October to 15th March). All farms are to have a leak proof cesspit, to collect foul water arising from cleaning etc. The manure clamp is to be connected to the cesspit. The water is kept for 15 days then collected by a bowser. These regulations serve to reduce the environmental pollution and the nitrate level in fields fertilised with manure. However, they also provide a tool to permit biosecurity measures to limit spread of diseases.

A programme of inspections on farms is implemented on risk basis in order to control: animal welfare, biosecurity, animal identification and registration, veterinary medicine, feed hygiene.

## **2. Measures in place<sup>(b)</sup>**

**The animal population present in the Maltese islands susceptible to *Mycobacterium bovis* infection is composed by 14427 bovine animals in 266 farms.**

- **98 dairy farms with 10912 animals**

- 168 farms of fattening animals with 3515 animals.
- Around 4.000 bovine animals are slaughtered every year (4,313 during 2017).

The target population for the tuberculosis control programme is composed by bovine animals over 6 weeks old reared for breeding purpose and present in dairy and non-dairy farms.

#### Description of the measures in place for the tuberculosis eradication programme

##### National legislation

Hereunder is mentioned the legislation that provides the legal basis for all the measures included in the tuberculosis control programme. All the regulations are available in the Justice Service of the Maltese Government at the following link <http://www.justiceservices.gov.mt>

**A) Veterinary Services Act Cap.437 of 1<sup>st</sup> February 2002 (*ACT XXIII of 2001, as amended by Act XVIII of 2002; Legal Notice 426 of 2007; and Act XXIII of 2009.*)**. The regulation establishes and consolidates the general requirements in the veterinary field, veterinary medicinal products, feeding stuffs and zootechnical requirements and the regulation of the veterinary profession. It gives the power to the VPRD to prescribe the general rules concerning the prevention and control of diseases, the health conditions to be observed in relation to the movement of live animals and germinal products, the identification of the animals, the importing condition of animals and animal products, the veterinary inspections, the financial and compensatory measures in connection with national schemes for eradication of animal diseases, the obligations of animal keepers, the certifications.

According to the rules laid down in the Veterinary Services Act the bovine tuberculosis is included in the list of the diseases for which the owner, the keeper, the dealer or the importer, the consignee, the carrier, the retailer or any other person authorised to dispose of live animals, products of animal origin, animal feeding stuffs or veterinary medicinal products or the representative of such persons, or any person in charge of a private veterinary activity must observe any obligation imposed and implement the rules mentioned hereunder:

- co-operate and assist in the control of the disease;
- observe the obligations imposed by the veterinary services, in the case of a suspected outbreak including any obligation concerning the restriction of movement of animals and humans, the slaughtering of animals, the destruction of animal products, feeding stuffs and equipment, and the cleaning and disinfection of premises, material and equipment;
- identify and register animals and declare the movements of animals for which they are responsible;
- keep individual registers for each holding for which they are responsible;
- observe the health conditions in connection with the movements of live animals;
- produce, at the request of any officer of the veterinary services, the necessary certificates or documents;

- declare and notify to the veterinary services any suspected outbreak of the disease;
- shall not place in a holding or on the market, recognised as being officially free of tuberculosis, any animal which is not covered by the proper guarantees;
- shall not accept in a holding, centre or organisation, or on the market, recognised as being officially tuberculosis free, any animal which is not covered by guarantees, to show that such animal is free from tuberculosis;

C) Veterinary Act- Subsidiary Legislation 437.86 (*Legal notice 314 of 2005 as amended by LN 2008 of 2009*): measures for the eradication of brucellosis, tuberculosis and leucosis in cattle rules. The regulation implements the rules contained in the European Union Council Directive 77/391/EEC concerning the introduction of Community measures for the eradication of brucellosis, tuberculosis and leucosis in cattle and lays down rules to improve the animal health status of cattle. For the purpose of these rules the Competent Authority shall draw up plans for accelerating the eradication of tuberculosis. The plan for accelerating the eradication of bovine tuberculosis are devised by the competent authority so that herds may be classed as "officially tuberculosis -free", in accordance with community law, and in particular European Union Council Directive 64/432/EEC on animal health problems affecting intra-Community trade in bovine animals and swine, as last amendments. The plan lists the measures to be taken to accelerate and intensify the eradication of bovine tuberculosis and specifies the measures to combat and prevent this disease

According to this legislation the programme drawn and implemented includes:

- the description of herds subject to control measures, and of herds with confirmed bovine tuberculosis;
- the total numbers i) of animals subject to control measures; ii) of infected animals; iii) of animals slaughtered within the programme;
- the scheduled duration of the initial eradication programmes and of the accelerated plans;
- the method applied for checking on the effective application of the accelerated plans;
- the national budgetary allocation for the eradication of bovine tuberculosis and the breakdown by items of these allocations

C) Prevention of Disease Ordinance, Chapter 36 of the laws of Malta, section 68, (*Enacted by ORDINANCE VIII of 1908 and following amendments*) states that every person having in his possession or under his charge an animal affected with tuberculosis shall:

- as far as practicable keep that animal separate from other animals not so affected; and
- with all practicable speed, give notice of the fact of the animal being so affected, to an officer for the district wherein the animal so affected is.

The officer, to whom any such notice is given, shall forthwith give the information to the Competent Authority.

#### Identification of animals and registration of holdings:

The rules for animal identification and registration of herds and animals are stated in the following regulations:

- Veterinary Services Act, section 7 (*ACT XXIII of 2001, as amended by Act XVIII of 2002; Legal Notice 426 of 2007; and Act XXIII of 2009*);
- Vet. Serv. Act. 437.78, identification and registration of animals rules, (*Legal Notice 292 of 2005*);
- Milking Animals Regulation S.L. 36.32 section 3 (*Legal Notice 151 of 1989*);
- European Union Act, Chapter 460 of the laws of Malta, section 3-4 (*ACT V of 2003, as amended by Act III of 2006; Legal Notice 427 of 2007; and Act VII of 2012*);
- Regulation (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products and repealing Council regulation (EC) No 820/97;
- Council Directive 92/102/EEC of 27 November 1992 on the identification and registration of animals (*amended by OJ L 005 09.01.2004 p.8*);
- Control of marking of animals regulation S.L. 36.17 sections 2-3, (*Government Notice 563 of 1957, as amended by Legal Notice 35 of 1964*);
- Undulant fever (prevention) regulation S.L. 36.04 section 4, (*Government Notice 50 of 1924*)

All livestock holdings are identified by an unique herd number and they are registered with Veterinary and Phytosanitary Regulation Department. All the information pertinent to each farm and bovine animal is also kept on the National Livestock database within the Veterinary Information System.

All bovine animals are identified according to the Vet. Act. S.L. 437.84, Bovine animal identification and registration, which implements the provision of Regulation 1760/2000, regarding the system for the identification and registration of bovine animals.

The system for the identification and registration of bovine animals includes the following elements:

1) The ear tags to individually identify the animals. The ear tags are applied within a period of twenty days from animal birth and in any case before the animal leaves the holding on which it was born. Any animal from another Member State retains its original ear tags if introduced in Malta.

No ear tags are removed or replaced without the permission of the Veterinary Regulation Directorate.

The ear tags are allocated to every single holding, distributed and applied to the animals by Veterinary Support Officers (VSOs) of the Animal Register Section of the Veterinary Regulation Directorate.

The responsibility of the identification and registration of the animals falls on the owner of the animals. The identification of the animals is carried out by the Veterinary Support Officers of the Veterinary and Phytosanitary Regulation Department who visit the farms at least every month or upon the request of the owners for the identification of the new animals or in case the animals have lost their tags.

2) The computerised database. The Veterinary Regulation Directorate has established a database in

accordance with Articles 14 and 18 of Directive 64/432/EC where all data related to animal identification (id number, breed, date of birth, death) and animal movements are stored. The computerised database was declared fully operational from 1st May 2004 by the EU Commission.

3) The animal passports. The I&R system and database was recognised as fully operational and according to EU rule the passports of the animals (bovine born in Malta and not traded in other countries) are not printed anymore.

4) The herd book. A register is kept in each farm and updated with the following information regarding each animal: ear tag, date of birth, ear tag number of the mother, breed, sex, data of introduction in the farm and provenience, date of leaving from the farm and destination.

In case of the finding of a not identified animal in a farm, a blood sample is collected and tested for brucellosis and leucosis and an intradermal tuberculosis test is performed. A notification is immediately sent to the Animal register Section of VRD for further actions.

In order to verify the compliance with I&R rules, inspections on farms are regularly carried out according to the provisions of Reg.1760/00. The outcomes are reported in the annual reports of the VPRD.

#### Rules on the animal movements

Movement rules are established for the prevention of the spread of diseases among animal population. The national legislation for this purpose is the following:

- Prevention of Disease among animals, S.L. 36.20 sections 16-17 (*LEGAL NOTICE 63 of 1967, as amended by: Legal Notice 52 of 1972; Act XIII of 1983; and Legal Notices 59 of 1998 and 407 of 2007*);
- Measures for the Eradication of Brucellosis, Tuberculosis and Leucosis in cattle rules – SI 437.86 (*LEGAL NOTICE 314 of 2005, as amended by Legal Notice 208 of 2009*);
- Foot and Mouth Disease regulation -S.L. 36.05, section 4 (*GOVERNMENT NOTICES 103 of 1932 and 457 and 554 of 1937*);
- Control of Foot and Mouth disease regulation- S.L. 36.27 section 2 (*LEGAL NOTICE 74 of 1975*);
- Undulant fever (prevention) regulation -S.L. 36.04 section 7 (*GOVERNMENT NOTICE 50 of 1924*);

No bovine and ovi-caprine animals on the Islands can be moved without a permit issued by the Animal Health Unit of the Veterinary Regulation Directorate. According to Legal Notice 314/2005 Chapter 437 of the Veterinary Services Act, "Measures for the Eradication of Brucellosis, Tuberculosis and Leucosis in cattle rules" no movement of male animals are allowed from non-dairy farms to dairy farms irrespective of disease status.

All animal movements including farm to farm, farm to abattoir and temporary movements such as movements to shows have been prohibited without a movement permit obtained from the official competent authority (Veterinary Regulation Directorate) and based on the health status of the holding. Movements from herds of male for fattening only to dairy farms are not allowed according to the national legislation (*LEGAL NOTICE 314 of 2005, amended by Legal Notice 208 of 2009*).

<p>If a positive reaction is detected, the holding is declared as tuberculosis-suspected and no movement is permitted from the holding without the permission of the CVO. The only permits issued would be to allow movement of tuberculosis-positive animals and other animals from the holding to the civil abattoirs of Malta or Gozo for slaughter. The civil abattoirs are the only abattoirs in the country.</p> <p>The herd is not considered as officially tuberculosis- free only until measures taken according a specific protocol have excluded the presence of the infection in the herd (see annex 1 and 2). Once this is the case, movement restrictions are lifted.</p> <p>A file is kept for each farm at the VRD level with all the permits issued and all animal movements are registered in the National Livestock Database. On request of any sort of movement or purchase transfer the file is brought up.</p>
<p><b>3. Notification system in place to the national competent authority<sup>(c)</sup></b></p> <p>Yes</p>
<p><b>4. Results of investigations and national evaluation of the situation, the trends <sup>(d)</sup> and sources of infection<sup>(e)</sup></b></p> <p>Write text here please</p>
<p><b>5. Additional information</b></p> <p>Write text here please</p>
<p><b>* 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</b></p> <p>(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, 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.</p> <p>(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.</p> <p>(c): Mandatory: Yes/No.</p> <p>(d): Minimum five years.</p> <p>(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).</p>

## 9. General evaluation\*: Trichinellosis

### 1. History of the disease and/or infection in the country<sup>(a)</sup>

Write text here please

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

Write text here please

### 3. Any recent specific action in the Member State or suggested for the European Union<sup>(b)</sup>

Write text here please

### 4. Additional information

Write text here please

#### \* 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

## 10. Description of Monitoring/Surveillance/Control programmes system\*: Trichinellosis

### 1. Monitoring/Surveillance/Control programmes system<sup>(a)</sup>

In Malta there are no holdings which are officially recognized as applying controlled housing conditions in accordance with the requirements laid down in Annex IV of Regulation (EU) 2015/1375. Monitoring and surveillance schemes are implemented at slaughterhouse level. Therefore, all carcasses of domestic swine are systematically sampled during post-mortem inspection and examined for Trichinella. All carcasses of equine animals are sampled during post-mortem inspection and examined for Trichinella. No other susceptible species are slaughtered in Malta.



Sampling for *Trichinella* monitoring is carried out by officers under the supervision of the official veterinarians employed with the Veterinary Regulation Directorate (VRD) within the Safety of the Food Chain Unit during the slaughtering process of swine and equine animals at the two slaughterhouses, located in Malta (Marsa) and Gozo (Xewkija). The samples are taken in accordance to Commission Implementing Regulation (EU) 2015/1375. The procedure to be followed is described in detail in the dedicated standard operating procedure. Furthermore, an internal agreement is available between the National Veterinary Laboratory (NVL) and the Safety of the Food Chain Unit as an acknowledgement of the procedures to be put in place.

#### Description of the sampling techniques:

Sampling in carcasses of domestic swine is carried out in accordance to Annex I Chapter I of Regulation (EU) 2015/1375. A specimen weighing at least 1g is taken from the pillar of the diaphragm of each carcass at the transition to the sinewy part. In case of breeding sows and boars, the weight of the specimen is at least 2g. In the event the pillar of the diaphragm is not available, as indicated in the Regulation, a specimen weighing at least 2g (at least 4g for breeding sows and boars) is taken from the rib part or the breastbone part of the diaphragm, or from the jaw muscle.

Sampling on carcasses of equine animals is performed in accordance to Annex III of Regulation (EU) 2015/1375. A specimen larger than 10g is taken from the pillar of the diaphragm at the transition to the sinewy part or else a sample weighing at least 10g is taken from the jaw muscle or from the tongue.

In the relevant SOP all precautions to be taken during sampling procedures are described: the muscle must be cleaned from connective tissue and fat; special attention must be paid when collecting muscle samples from the tongue in order to avoid contamination with the superficial layer of the tongue, which is indigestible and can prevent reading of the sediment.

The sample collected at the Marsa Public Abattoir are submitted to the National Veterinary Laboratory in batches of 100 samples progressively during the slaughtering process, taken into consideration the proximity of the Laboratory to the slaughterhouse. The samples collected at the Gozo Civil Abattoir are submitted to the National Veterinary Laboratory within 30 hours from sampling and are kept refrigerated until submission. In the event of emergency slaughtered animals on the holding, carcasses are immediately transported to the slaughterhouse; sampling and subsequent examination are carried out as soon as possible.

The batches of samples are accompanied by the relevant Submission Form.

#### Testing scheme:

With regard to the testing scheme, the diagnostic method used the detection of *Trichinella* larvae in animal muscle tissue is the magnetic stirrer method for pooled sample digestion performed in accordance to Annex I Chapter I of Regulation (EU) 2015/1375. However, point 1(m) is not applied. The entire procedure of testing and the apparatus and reagents required are described in the dedicated internal SOP.

*Trichinella* analysis is carried out and finalised on the same day of the submission of samples, with the exception of late submissions. In the latter case, samples are kept refrigerated at NVL facilities. Once the results of the *Trichinella* analysis are ready, the National Veterinary Laboratory informs via email the official veterinarian responsible for the slaughterhouse about the outcome of the analysis. Carcasses are released for human consumption.

All test reports are issued within three working days from the date of the analysis and submitted to

the official veterinarian responsible of the red meat slaughterhouses within the Safety of the Food Chain Unit of the VRD.

## 2. Measures in place<sup>(b)</sup>

In Malta there are no holdings which are officially recognized as applying controlled housing conditions in accordance with the requirements laid down in Annex IV of Regulation (EU) 2015/1375. With regard to the life cycle of the parasite and the etiology, in Malta the sylvatic cycle may not occur due to the absence of animals which are normally associated as sources of infection, such as foxes, wild boars, birds of prey and corvids.

Preventive measures are put in place through the adoption of bio-security measures at farm level. Farmers are encouraged to implement adequate and effective waste management and to undertake to observe all the necessary activities in order to ensure pest control against rodents.

## 3. Notification system in place to the national competent authority<sup>(c)</sup>

Write text here please

## 4. Results of investigations and national evaluation of the situation, the trends<sup>(d)</sup> and sources of infection<sup>(e)</sup>

All carcasses of domestic swine and equidae are systematically sampled during post-mortem inspection and examined for Trichinella.

The following are the number of animals slaughtered and sampled for Trichinella from 2011 to 2017:

YEAR	SWINE	EQUIDAE
2017	55407	3
2016	56312	17
2015	60948	17
2014	70050	20
2013	71498	40
2012	68908	18
2011	83432	-

The data reported are referred to the animals regularly slaughtered in the two slaughterhouses and the animals subjected to emergency slaughter on the holding of provenance.

No cases of detection of Trichinella larvae are reported for the entire period.

No monitoring programme in wild animals is put in place since susceptible species are not present in the Maltese Islands.

## 5. Additional information

Write text here please

**\* 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, 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).

## 11. Food-borne Outbreaks

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

Write text here please

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

Write text here please

### 3. National evaluation of the reported outbreaks in the country<sup>(a)</sup>

Write text here please

### 4. Descriptions of single outbreaks of special interest

Write text here please

### 5. Control measures or other actions taken to improve the situation

Write text here please

### 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

Write text here please

### 7. Additional information

Write text here please

(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.
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## 12. Institutions and laboratories involved in antimicrobial resistance monitoring and reporting

Write text here please

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

## 13. General Antimicrobial Resistance Evaluation

**1. Situation and epidemiological evolution (trends and sources) regarding AMR to critically important antimicrobials<sup>(a)</sup> (CIAs) over time until recent situation**

Write text here please

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

Write text here please

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

Write text here please

**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**

Write text here please

**5. Additional information**

Write text here please

(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);

#### 14. General Description of Antimicrobial Resistance Monitoring\*; Please add the matrix and bacterial species

##### 1. General description of sampling design and strategy<sup>(a)</sup>

Write text here please

##### 2. Stratification procedure per animal population and food category

Write text here please

##### 3. Randomisation procedure per animal population and food category

Write text here please

##### 4. Analytical method used for detection and confirmation<sup>(b)</sup>

Write text here please

##### 5. Laboratory methodology used for detection of antimicrobial resistance<sup>(c)</sup>

Write text here please

##### 6. Results of investigation

Write text here please

##### 7. Additional information

Write text here please

##### \* 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