Manual for reporting on zoonoses and zoonotic agents, within the framework of Directive 2003/99/EC, and on some other pathogenic microbiological agents for information derived from the year 2019

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Abstract
This reporting manual provides guidance to Member States (MSs) for reporting on zoonoses and zoonotic agents in animals, food and feed under the framework of Directive 2003/99/EC and of Commission Delegated Regulation (EU) 2018/772 and also on the reporting of other pathogenic microbiological agents in food. The objective of this manual is to harmonise and streamline reporting by MSs to ensure that the data collected are relevant and comparable for analysis at the European Union (EU) level. This manual covers all the zoonoses and zoonotic agents included under the current data collection system run by the European Food Safety Authority (EFSA). Detailed instructions are provided on the reporting of data in tables and text in text forms. The instructions given relate to the description of the sampling and monitoring schemes applied by the MSs, as well as the monitoring results. Special reference is made to data elements which allow trend watching over time and the analysis of sources at the EU level. This manual is specifically aimed at guiding the reporting of information deriving from the year 2019.

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Key words: animal population, food, feed, zoonoses, trend watching, trend analysis, reporting

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Summary

This reporting manual provides guidance on the reporting of zoonoses and zoonotic agents in animals, food and feed under the framework of the Directive 2003/99/EC and of Commission Delegated Regulation (EU) 2018/772. Instructions are also provided on the reporting of other pathogenic microbiological agents in food. The objective of this manual is to harmonise and streamline reporting by Member States (MSs) to ensure that the data collected are relevant and comparable for analysis at the European Union (EU) level.

These instructions are intended to be applied to reporting through the Data Collection Framework. The data collection covers the most common reported infections and microbiological contaminants in animal populations including bovine tuberculosis, bovine, ovine and caprine brucellosis, Salmonella, Campylobacter, Listeria, Yersinia, verotoxigenic Escherichia coli, Q fever, Trichinella, Echinococcus, Toxoplasma, West Nile virus, Cysticercus, and rabies in animals, food and feed. Data on some other microbiological contaminants or agents, such as staphylococcal enterotoxins, Cronobacter and histamine, are also covered by the manual.

This guidance typically applies to the agents, animal species and food categories to be reported on. Advice is also provided on the agent species, serotypes and serovars to be included in the reporting.

Specific instructions are given to describe the sampling and monitoring schemes applied by the MSs, as well as the monitoring results. Special reference is made to data elements which allow trend watching over time and the analysis of sources at the EU level and for which MSs are encouraged to provide data.

This manual is specifically aimed at guiding the reporting of the information deriving from the year 2019.
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1. Introduction

1.1. Background and Terms of Reference as provided by EFSA

EFSA’s mandates for the production of annual European Union (EU) Summary Reports (EUSRs): 1) on zoonoses and food-borne outbreaks, 2) on antimicrobial resistance (AMR) and on 3) Transmissible Spongiform Encephalopathies (TSE) are described in a unifying charter. These mandates from the European Commission (EC) to EFSA also require the production of reporting manuals which need regular updating.

The production of the EUSR on zoonoses and food-borne outbreaks as well as the EUSR on AMR is underpinned by the Directive 2003/99/EC laying down the EU system for monitoring and reporting of information on zoonoses, which obligates the MSs to collect data on zoonoses, zoonotic agents, AMR and food-borne outbreaks. EFSA is assigned the tasks of examining the data collected and preparing the EUSRs in collaboration with the European Centre for Disease Prevention and Control (ECDC).

Additionally, EFSA is asked to provide the following scientific and technical assistance to the Commission:

1. Regular follow-up of the literature regarding *Echinococcus multilocularis* infection in animals in the European Union and adjacent countries, including its geographical distribution and prevalence;

2. Analysis and critical assessment, in the context of Commission Delegated Regulation (EU) 2018/772, of (i) the sampling strategy considered for the programmes of the countries concerned; (ii) the data collected in the framework of these programmes; (iii) the detection methods used.

The production of the Annual assessment of *Echinococcus multilocularis* surveillance reports is underpinned by the Regulation (EU) 2018/772 with regard to preventive health measures for the control of *Echinococcus multilocularis* infection in dogs.

The present technical report is the manual for reporting on zoonoses and zoonotic agents pertaining to the data collection of information deriving from the year 2019.

1.2. Manual for reporting on zoonoses

As mentioned above, the EU system for monitoring and collecting information on zoonoses is established by the Directive 2003/99/EC on the monitoring of zoonoses and zoonotic agents. This Directive requires MSs to collect, evaluate and report data on zoonoses and zoonotic agents to the EC each year by 31 May. The system is based on current systems in the MSs, and, in a few cases only, data monitoring is harmonised by EC legislation to the extent that the results from the monitoring are comparable between the MSs. The EC submits this information to the EFSA, which examines the data and publishes the EUSRs from the provided information. The EUSRs are prepared in collaboration with the ECDC. Data collection on human diseases from MSs is conducted in accordance with Decision 1082/2013/EU on serious cross-border threats to health, which in October 2013 replaced Decision 2119/98/EC on setting up a network for the epidemiological surveillance and control of communicable diseases in the EU. The

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case definitions to be followed when reporting data on infectious diseases to ECDC are described in Decision 2012/506/EU.\(^7\)

Data on zoonoses and zoonotic agents can only be transmitted to the Data Collection Framework (DCF) (https://dcf.efsa.europa.eu/dcf-war/dc) using the XML format.

MSs can also report monitoring data and information on some other pathogenic microbiological agents in foodstuffs while they take care of their reporting obligations under the Zoonoses Directive 2003/99/EC. This information is also useful for watching trends over time of the proportion (%) of positive samples contaminated with zoonotic agents, at EU- and MS-level. Relevant EU legislation is: Commission Regulation (EC) No 2073/2005,\(^8\) Commission Regulation (EC) No 1441/2007,\(^9\) Commission Regulation (EU) No 1086/2011,\(^10\) Commission Regulation (EU) No 209/2013,\(^11\) Commission Regulation (EU) No 217/2014.\(^12\)

2. General reporting guidelines

In accordance with the Zoonoses Directive 2003/99/EC list A of Annex I, all MSs have to report on a mandatory basis on trends and sources of the following zoonoses, zoonotic agents and other subjects:

- brucellosis and agents thereof;
- campylobacteriosis and agents thereof;
- echinococcosis and agents thereof;
- listeriosis and agents thereof;
- salmonellosis and agents thereof;
- trichinellosis and agents thereof;
- tuberculosis due to *Mycobacterium bovis*;
- verotoxigenic *Escherichia coli* (VTEC);
- food-borne outbreaks;
- susceptible animal populations.

Other zoonoses need to be monitored and reported according to the epidemiological situation in each MS. This means that, if a certain zoonosis is of public health importance in a MS, this MS should report on that zoonosis, but the other MSs do not have the same obligation to report on it, if it is of minor importance at the national level.

The zoonoses to be reported mandatorily based on the epidemiological situation are in list B of Annex I of Directive 2003/99/EC:

**Viral zoonoses**

- calicivirus;
- hepatitis A virus;
- influenza virus;
- rabies virus;
- viruses transmitted by arthropods.

**Bacterial zoonoses**

- borreliosis and agents thereof;

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Manual for reporting on 2019 zoonoses data

- botulism and agents thereof;
- leptospirosis and agents thereof;
- psittacosis and agents thereof;
- tuberculosis other than tuberculosis due to *Mycobacterium bovis*;
- vibriosis and agents thereof;
- yersiniosis and agents thereof.

Parasitic zoonoses
- anisakiasis and agents thereof;
- cryptosporidiosis and agents thereof;
- cysticercosis and agents thereof;
- toxoplasmosis and agents thereof.

The reporting of other pathogenic microbiological and toxicological agents in foodstuffs is on a voluntary basis and includes reporting of *Cronobacter* spp., staphylococcal enterotoxins and histamine.

3. Reporting prevalence results (in the prevalence data model)

3.1. General guidelines

The results (data) for prevalence are obtained from different investigations and should be reported in the **prevalence data model**. In the following sections and for each zoonoses-/agent- in particular the animal species as well as the food categories, recommended to be reported through the DCF, are indicated in bold text.

**Information requested to be reported**

Data on food, animals and feed should be reported using the categories as provided by the catalogues. Depending on the food/feed/animal category there is variability in the degree of detail (level) which can be provided (Table 1).

For each main category (Food, Animals and Feed) data providers are strongly encouraged to provide as much relevant information and level of detail as possible provided by the **ZOO_CAT_MATRIX catalogue**. Definitions for each main category are presented in the scope note of the ZOO_CAT_MATRIX catalogue and general definitions are in Appendix A, B and C of this report.

**Table 1:** General guidelines for reporting the prevalence of zoonotic agents in food, animals and feedingstuffs

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>The specification of the food, feed and animal, can be done at high-level categorisation (Level 1); but it is highly recommended that more detailed information be provided (L_2, L_3 and L_4). For example: 'Meat from bovine animal/meat preparation/raw but intended to be eaten cooked'. If no specific information is available at lower level the unspecified option can be used e.g. 'Meat from poultry, unspecified' or 'Milk from other animal species or unspecified'. It is recommended to use only 'Unspecified' option when there is no additional information available. For animal more detailed information can be provided such as the farm type in which the animals are kept (wild, farmed, pet), the animal production category (e.g. breeding animals, fattening animals), the animal production period (e.g. rearing, laying, adult) or the animal production system and/or housing conditions (e.g. not raised under controlled housing conditions, raised under controlled housing conditions) and the age category (e.g. day old chicken, piglets, gilts, sows).</td>
</tr>
<tr>
<td>Sampling stage</td>
<td>It defines where the samples have been collected (e.g. 'Processing plant', 'Retail', 'Farm', 'Slaughterhouse') and it should be reported using the <strong>SAMPNT</strong> catalogue.</td>
</tr>
<tr>
<td>Sample origin</td>
<td>It allows the characterisation of the country of origin from which the matrix was obtained. It might be of importance for the reporting of some positive cases of certain zoonoses such as West Nile Virus (WNV, e.g. imported horses), rabies and <em>Salmonella</em> in feed (e.g. imported from third countries). It should be reported using the <strong>COUNTRY</strong> catalogue.</td>
</tr>
<tr>
<td>Elements</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sample type</td>
<td>This refers to the category of the sample (e.g. 'Animal sample', 'Food sample' and 'Environmental sample') as well as the type of sample taken to be analysed for each category reported using the ZOO_CAT_SMPTYP catalogue.</td>
</tr>
<tr>
<td>Sampling context</td>
<td>The sampling context is used to describe the context or the reason for which samples at national level are collected. Information on the context of the sampling should be reported using terms from the PRGTYP catalogue, hierarchy zooSampContext (i.e. 'Survey' (national, EU baseline), 'Monitoring' (passive, active), 'Surveillance', 'Surveillance, based on Regulation 2073/2005', 'Clinical investigations', 'Control and eradication's programmes). The term 'Unspecified' can only be used if no information about the sampling context is available.</td>
</tr>
<tr>
<td>Sampler</td>
<td>The sampler is used to characterise the person or 'responsible' for the final sample taken. To identify the sampler, relevant terms from the SAMPLR catalogue must be reported (e.g. competent authority (e.g. 'Official sampling', 'Official, based on Regulation 854/2004') or Industry (e.g. 'HACCP' - Hazard Analysis and Critical Control Point and own checks', 'Industry sampling') or private ('Private sampling')).</td>
</tr>
<tr>
<td>Sampling strategy</td>
<td>The sampling strategy is describing the methodology (the sampling method) on how the samples are selected and obtained within a certain context. The sampling strategy must be reported using terms from the SAMPRSTR catalogue (i.e. 'Census', 'Convenience sampling', 'Objective sampling', 'Selective sampling', and 'Suspect sampling'). The term 'Unspecified' can only be used if no information about the sampling strategy is available.</td>
</tr>
<tr>
<td>Sampling details</td>
<td>If relevant, this free text data element can be used to give further information on the sampling stage or context or other further information in brief that is not covered by the data model.</td>
</tr>
<tr>
<td>Area of sampling</td>
<td>This data element should be used to give further information on the area, region or province from where the animal/food/feed sample has been collected according to the NUTS\textsuperscript{13} coding system. This data element is recommended to be used when regional reporting is of epidemiological relevance and for zoonoses for which no harmonised monitoring schemes across EU are in place. For diseases such as rabies, Echinococcus multilocularis and West Nile virus it is recommended to give detailed information with relation to the area of sampling.</td>
</tr>
<tr>
<td>Sampling unit</td>
<td>For food and feed the terms 'Single' and 'Batch' are used. For animals, the sampling unit may be 'Animal', 'Holding', 'Herd/flock' or 'Slaughter batch'. The sampling unit often corresponds with the epidemiological unit for reporting purposes. In case prevalence at batch level is reported, it should be made clear how sampling of a batch is performed (= 'x' number of single samples) and can be clarified in the text forms. This accounts also for prevalence at flock, holding or herd level. If the reported epidemiological unit is herd/flock or holding it should be made clear how a herd/flock/holding sampling is performed (= 'x' number of animals per flock/herd/holding).</td>
</tr>
<tr>
<td>Sample weight</td>
<td>The weight or volume of the sample/specimen used in the laboratory for the analysis of the sample can be specified: e.g. 10; for carcass swabs the area swabbed should be reported (e.g. 100).</td>
</tr>
<tr>
<td>Sample weight unit</td>
<td>It describes the unit to be used for the sample weight e.g. gram, millilitre, square centimetre.</td>
</tr>
<tr>
<td>Source of information</td>
<td>The institute (or laboratory) that has provided the data. Abbreviations should be clarified in the text forms.</td>
</tr>
<tr>
<td>Analytical methods</td>
<td>The diagnostic or analytical methods used in testing of the sample; this information is requested for data on Listeria monocytogenes in food, VTEC, Toxoplasma, Q fever, West Nile virus and tuberculosis in the other animals (e.g. International Organization for Standardization (ISO) 16654:2001 or ISO TS 13136 for VTEC; modified agglutination test (MAT), latex agglutination test (LAT) or enzyme-linked immunosorbent assay (ELISA) for Toxoplasma; fluorescence in situ hybridisation (FISH) or polymerase chain reaction (PCR) for Q fever; reverse-transcription PCR (RT-PCR), immunoglobulin G (IgG) ELISA, IgM-capture ELISA (MAC-ELISA), indirect haemagglutination test (IHA), sero-neutralisation test for West Nile virus, and PCR for tuberculosis in the other animals). This information is also requested for data on Echinococcus multilocularis for countries aiming to demonstrate freedom from disease. It is highly recommended for all the reported zoonoses to provide the information about the analytical method used.</td>
</tr>
<tr>
<td>Total units tested</td>
<td>The total number of sampling units that are analysed in laboratories, slaughterhouses and institutes or tested in another way and for which results are available. A sampling unit (e.g. flock) should not be reported twice even if it has been checked more than once for a specific zoonotic agent. Take into consideration 'the epidemiological sampling unit' to report the total units tested.</td>
</tr>
<tr>
<td>Total units positive</td>
<td>The total number of sampling units considered infected (contaminated) based on the testing results should be reported. In case that no positive units were detected, a '0' (zero) should be reported. Take into consideration 'the epidemiological sampling unit' and how this unit is/was defined as 'positive (infected, contaminated)' in the reporting.</td>
</tr>
</tbody>
</table>

### Elements | Description
---|---
Units tested | The number of units that are analysed in the laboratories, slaughterhouse and institutes, or tested in another way, in total, and for which results are available. **This data element is mandatory when reporting data on Listeria monocytogenes** in food and should be left empty in all other cases.
Units positive | The total number of units considered positive/infected/contaminated based on the testing results and on the diagnostic methods used. This data element is mandatory when reporting positive results of a qualitative method (positivity or presence taking into account the cut off of the applied diagnostic assay) and for all results referring to Listeria monocytogenes or histamine in food (qualitative and quantitative methods). It indicates the number of units tested positive for the agent species, serovar (e.g. Salmonella Typhimurium, Salmonella Infantis, Campylobacter jejuni) or phagetype (e.g. Salmonella Enteritidis-PT 1) reported in the data element zoonosis.

Information that could be reported in the data elements (such as information on the sampling stage and context) should not be reported in the ‘comment’ data element, as this would make the data extraction difficult.

The total number of samples positive for a zoonotic agent reported in the data element ‘Total units positive’ (e.g. Salmonella spp., Brucella spp., Echinococcus spp.) must equal the sum of the ‘Units positive’ reported for species/serotypes/serovar in their specific rows including the unspecified category row. An exception is the case where more than one species/serotype/serovar is isolated from the same sample. In this case, that fact should be stated in the comment adjacent to the reporting row for that specific species/serotype/serovar.

3.2. **Specific guidelines in animals**

Specific guidelines for reporting data on zoonoses in animals are summarised in Table 2.

**Table 2: Specific guidelines for reporting data on zoonoses in animals**

| Elements | Description |
---|---|
Sample origin | The country of origin of the animal. |
Sampling stage | e.g. ‘Farm’, ‘Slaughterhouse’. |
Sample type | The sample category and sample type based on the sampling carried out (e.g. ‘Animal sample-faeces’ or ‘environmental sample-boot swabs’). |
Sampling context | e.g. ‘Monitoring’. |
Sampler | e.g. ‘Official sampling’ or ‘Industry sampling’. |
Sampling strategy | e.g. ‘Objective sampling’, ‘Census’, ‘Suspect sampling’. |
Sampling details | Free text to be used for further information on samples. |
Area of sampling | Information on the region from where the samples are collected is strongly recommended to be reported; the NUTS standards are made available in the specific catalogue. NUTS is a geographical nomenclature subdividing the territory of the EU into regions at three different levels (NUTS 1, 2 and 3, respectively, moving from larger to smaller territorial units). MSs are asked to report data at the lowest level of granularity available, following the rule that the total units tested, total units positive and units positive for the selected NUTS level should be reported. Examples of regional reporting can be found in Appendix D. Depending on the available data the following scenarios of reporting are possible: |
| | – If only country-level data are available, select the NUTS level corresponding to the whole country and report the total at national level. |
| | – If data are available at both country level and from all regions, select the NUTS level corresponding to the whole country and report the total at national level as well as the total for each region. |
| | – If data are available at country level and only partially at regional level, select the NUTS level corresponding to the whole country and report the total at national level, as well as the total for each region for which you have data. In case that MSs have data at a finer level of detail (province/city level), report also the data available at the requested NUTS level. Please refer to Appendix D for practical examples on regional reporting. |
3.2.1. *Salmonella* spp. in animals

For the purpose of following trends, the information to be reported is:

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Institute (or laboratory) that has provided the data. Abbreviations should be clarified in the text forms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total units tested</td>
<td>The number of sampling units that are analysed in total, and for which results are available.</td>
</tr>
<tr>
<td>Total units positive</td>
<td>The total number of sampling units considered positive for a specific zoonotic agent at level 1 based on the results of the analyses reported. In case that no positive units were detected, a ‘0’ (zero) should be reported.</td>
</tr>
<tr>
<td>Units positive</td>
<td>The number of sampling units considered positive for a specific zoonotic agent at level 2 (e.g. <em>Campylobacter jejuni</em>, <em>Campylobacter coli</em>).</td>
</tr>
</tbody>
</table>

3.2.1.1. *Salmonella* spp. in animals

For the purpose of following trends, the information to be reported is:

- *Salmonella* spp. and *Salmonella enterica* subsp. *enterica* serovar: *S.* Enteritidis, *S.* Typhimurium, *S.* Hadar, *S.* Infantis, and *S.* Virchow in parent breeding flocks of *Gallus gallus* (broiler production line/egg production line);
- *Salmonella* spp. and *S.* Enteritidis and *S.* Typhimurium in flocks of laying hens (*Gallus gallus*);
- *Salmonella* spp. and *S.* Enteritidis and *S.* Typhimurium in flocks of broilers (*Gallus gallus*);
- *Salmonella* spp. and *S.* Enteritidis and *S.* Typhimurium in flocks of breeding turkeys;
- *Salmonella* spp. and *S.* Enteritidis and *S.* Typhimurium in flocks of fattening turkeys;
- *Salmonella* spp. in fattening pigs.

Also monophasic *S.* Typhimurium strains should be reported for trend-following purposes.

3.2.2. *Salmonella* spp. in animal populations with control programmes set by EU legislation

Relevant animal categories to be reported on

For breeding flocks of *Gallus gallus* and turkeys: elite breeding flocks, grandparent breeding flocks, parent breeding flocks. When possible, the stage of sampling (age groups: day-old chicks, rearing flocks, adult) may be indicated and, in the case of *Gallus gallus*, the production line (egg and meat).

Laying hen flocks of *Gallus gallus*, broiler flocks of *Gallus gallus*, fattening turkey flocks.

Please note that for the purpose of verifying whether or not the EU *Salmonella* reduction target set by Commission Regulation (EU) No 200/2010\(^{14}\) for breeding flocks of *Gallus gallus* is met, MSs shall report the results separately at least for adult flocks, because the target is set for adult breeding flocks.

Please note that for the purpose of verifying whether or not the EU *Salmonella* reduction target set by Commission Regulation (EU) No 517/2011\(^{15}\) for laying hen flocks of *Gallus gallus* is met, MSs shall report the results separately at least for adult flocks, because the target is set for adult laying hen flocks. Furthermore, if results from flocks other than those under the *Salmonella* control programme are reported, these flocks should be reported separately, in order to facilitate the verification of the target.

Please note that for the purpose of verifying whether or not the EU *Salmonella* reduction target set by Commission Regulation (EC) No 200/2012\(^{16}\) for broiler flocks of *Gallus gallus* is met, MSs shall separately report the results from sampling within the 3 weeks before the birds are moved to the slaughterhouse (= before slaughter), because the target is set for this period.

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Please note that for the purpose of verifying whether or not the EU *Salmonella* reduction target set by Commission Regulation (EC) No 1190/2012\(^\text{17}\) for turkey flocks is met, MSs shall report separately the results from breeding turkey flocks during production (adult flocks) and, in the case of fattening turkey flocks, the results from sampling within the 3 weeks before the birds are moved to the slaughterhouse (= before slaughter), because two different targets are set for turkeys.

Please note that the above referenced legislation further specifies that it is compulsory to report: a) all flocks positive for *Salmonella* spp. (= total units positive), b) all flocks positive for each of the target serovars, c) all flocks positive for non-target *Salmonella* serovars or for *Salmonella* unspecified (isolates that are untypable or not serotyped). Reporting of all flocks positive for non-target *Salmonella* serovars is required if there are changes in the epidemiologic situation of a certain serovar.

**Relevant agent species/serovars/phagetypes to be reported**

*Salmonella* serovars and phagetypes should be reported, where available.

As regards breeding flocks of *Gallus gallus*, the serovars *S.* Enteritidis, *S.* Typhimurium, *S.* Hadar, *S.* Infantis and *S.* Virchow should all be reported separately, as these are the serovars covered by the target. Monophasic *S.* Typhimurium strains with the antigenic formula 1,4,[5],12:i:-\(^\text{18}\) are also covered by the target and need to be reported separately (see text box).

For flocks of laying hens of *Gallus gallus*, *S.* Enteritidis and *S.* Typhimurium should be reported separately on account of the target set for these serovars. Monophasic *S.* Typhimurium strains with the antigenic formula 1,4,[5],12:i:-\(^\text{18}\) are also covered by the target and need to be reported separately (see text box).

In the case of broiler flocks, *S.* Enteritidis and *S.* Typhimurium should be reported separately on account of the target set for these serovars. In addition, it is recommended that the five most frequent serovars and also *S.* Infantis, *S.* Hadar and *S.* Virchow be reported, even though these serovars may not be included in the top five serovars. Monophasic *S.* Typhimurium strains with the antigenic formula 1,4,[5],12:i:-\(^\text{18}\) are also covered by the target and need to be reported separately (see text box).

In the case of turkey breeding flocks and turkey fattening flocks, *S.* Enteritidis and *S.* Typhimurium should be reported separately on account of the target set for these serovars. Monophasic *S.* Typhimurium strains with the antigenic formula 1,4,[5],12:i:-\(^\text{18}\) are also covered by the target and need to be reported separately (see text box).

Data on monophasic *S.* Typhimurium should be reported as follows: this group comprises *S.* Typhimurium strains lacking the second phase H antigen (1,4,[5],12:i:-\(^\text{18}\)). Whenever feasible, as much detail as possible of the antigenic formula as determined by testing should be reported (e.g. 1,4,[5],12:i:- or 1,4,12:i:-). If the full antigenic formula is not available but a phagetype that is consistent with *S.* Typhimurium lacking phase 2 flagellar antigen has been confirmed, and the lack of the second flagellar antigen has been verified by PCR, then it is recommended that the term ‘monophasic *S.* Typhimurium’ be used.

In case no differentiation can be made between regular and monophasic *S.* Typhimurium, reporting should be done as *S.* Typhimurium.

The different sample types to be reported for different animal populations with control programmes set by EU legislation are presented in Table 3.

---


\(^{18}\) The following antigenic formula can also be used for reporting monophasic *S.* Typhimurium 1,4,12:i:- or 4,[5],12:i:-.
Table 3: Sample type to be reported for different animal populations with control programmes set by EU legislation

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Sample type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeding flocks of Gallus gallus and turkeys</td>
<td>Faeces, boot/sock swabs, internal linings of delivery boxes, dead chicks, eggshells, fabric swabs. Other samples could include blood, dust, environmental samples, fluff, hatched eggs, hatching eggs, meconium and organs. Blood or eggs are collected in the case of serological examinations.</td>
</tr>
<tr>
<td>Laying hens</td>
<td>Dust, faeces, boot/sock swabs. Other samples could include environmental samples, blood, etc.</td>
</tr>
<tr>
<td>Broilers and fattening turkeys</td>
<td>Boot/sock swabs, hand drag swabs. Other samples could include environmental samples, dust samples, litter samples, blood, etc.</td>
</tr>
</tbody>
</table>

Case definition/definition of a positive sample

- **Positive flock/unit**—each flock should be reported positive only once, irrespective how many positive samples were received. Specific guidelines for reporting positive flocks for *Salmonella* spp. in poultry populations are summarised in Table 4.

Table 4: Specific guidelines for reporting positive flocks for *Salmonella* spp. in animal populations with control programmes set by EU legislation

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A breeding flock (Regulation No 200/2010)</td>
<td>Shall be considered positive when the presence of the relevant <em>Salmonella</em> serotypes (other than vaccine strains) has been detected in one or more samples taken in the flock, even if the relevant <em>Salmonella</em> serotypes is only detected in the dust sample, or - when the confirmatory sampling as part of official controls in accordance with point 2.2.2.2(b) does not confirm the detection of relevant <em>Salmonella</em> serotypes but antimicrobials or bacterial growth inhibitors have been detected in the flock. This rule shall not apply in exceptional cases described in point 2.2.2.2(c) where the initial <em>Salmonella</em> positive result from sampling at the initiative of the food business operator has not been confirmed by the sampling as part of official controls.</td>
</tr>
<tr>
<td>A laying flock (Regulation No 517/2011)</td>
<td>Shall be considered positive where: (a) the presence of the relevant <em>Salmonella</em> serotypes (other than vaccine strains) has been detected in one or more samples taken in the flock, even if the relevant <em>Salmonella</em> serotype is only detected in the dust sample or dust swab; or (b) antimicrobials or bacterial growth inhibitors have been detected in the flock. This rule shall not apply in exceptional cases described in Annex II D point 4 of Regulation (EC) No 2160/2003, where the initial <em>Salmonella</em> positive result has not been confirmed by that respective sampling protocol.</td>
</tr>
<tr>
<td>A flock of broilers (Regulation No 200/2012)</td>
<td>Shall be considered positive where the presence of <em>Salmonella</em> Enteritidis and/or <em>Salmonella</em> Typhimurium (other than vaccine strains) was detected in the flock. Positive flocks of broilers shall be counted only once per round, irrespective of the number of sampling and testing operations and only be reported in the year of the first positive sampling.</td>
</tr>
<tr>
<td>A flock of turkeys (Regulation No 1190/2012)</td>
<td>Shall be considered positive where the presence of <em>Salmonella</em> Enteritidis and/or <em>Salmonella</em> Typhimurium (other than vaccine strains, but including monophasic strains with the antigenic formula 1,4,[5],12:i:-) was detected in the flock. The prevalence shall be calculated separately for flocks of fattening turkeys and flocks of adult breeding turkeys.</td>
</tr>
</tbody>
</table>

General guidelines for reporting data on samples collected in poultry populations with control programmes set by EU legislation are summarised in Table 5.

Table 5: General guidelines for reporting data on samples collected in animal populations with control programmes set by EU legislation—*Gallus gallus* (fowl) and turkeys

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample type</td>
<td>The sample category and sample type based on the sampling carried out. If several types of samples were taken in different flocks, use separate rows to report the data. If several types of samples were taken in the same flock, only one sample type can be reported on, because a flock can only be reported on once.</td>
</tr>
<tr>
<td>Sampling context</td>
<td>‘Control or eradication programme’.</td>
</tr>
</tbody>
</table>

Elements | Description
--- | ---
Sampler | 'Official and industry sampling'. In addition, the results from sampling carried out by competent authorities ('official sampling') and from sampling by food business operators ('industrial sampling') could be reported separately for breeding flocks of *Gallus gallus* and for laying hens, whereas it is mandatory to report this information separately for broiler and turkey flocks (see further).
Sampling strategy | 'Census'.
Sampling unit | 'Flock'.
Target verification | 'Yes' for the data values to be used for the target verification.
No of flocks under control programme | The number of all breeding flocks in the country under the programme during the year.
Total units tested | The number of flocks in the specified production type, production level and age group under investigation. Each flock should be counted only once, irrespective of the number of times it is tested.
Total units positive | The total number of flocks considered positive for *Salmonella* based on the results of the analyses. In case that no positive units were detected, a '0' (zero) should be reported.
Units positive | The number of flocks considered positive based on the testing results for a specific *Salmonella* serovar (e.g. *Salmonella Typhimurium*, *Salmonella Infantis*) or phagetype (e.g. *Salmonella Enteritidis-PT 1*).

Specific guidelines for reporting data on samples collected in different poultry populations with *Salmonella* control programmes set by EU legislation are summarised in Tables 6 to 10.

**Table 6:** Specific guidelines for reporting data on samples collected in breeding flocks of *Gallus gallus* according to Commission Regulation (EU) No 200/2010 (target regulation)

Elements | Description
--- | ---
Matrix | For level 1 use ‘*Gallus gallus* (fowl)’; for level 2 use ‘parent breeding flocks’, ‘grandparent breeding flocks’ or ‘elite breeding flocks’; for level 3 use ‘adult’; report the information allocated to different production lines (egg and meat), as well as the level of the production pyramid (elite, grandparent and parent flocks) and separated by age groups (day-old chicks, rearing flocks, adult, unspecified). If results for the different types of breeding flocks are not available, use the ‘breeding flock, unspecified’.
Sampling stage | ‘Farm’ or ‘Hatchery’.
Sample type | ‘Animal sample – faeces’ or ‘Environmental sample - boot swabs’.

The number of flocks where *Salmonella* vaccine strains were detected may be reported in the comment data element regarding the specific animal population. However, these flocks are not counted as *Salmonella* positives.

**Table 7:** Specific guidelines for reporting data on samples collected in laying hens according to Commission Regulation (EU) No 517/2011 (target regulation)

Elements | Description
--- | ---
Matrix | ‘*Gallus gallus* (fowl) - laying hens - adult’.
Sampling stage | ‘Farm’.
Sample type | ‘Animal sample - faeces’ or ‘environmental sample - boot swabs’ or ‘Environmental sample - dust’.

**Table 8:** Specific guidelines for reporting data on samples collected in broiler flocks according to Commission Regulation (EU) No 200/2012 (target regulation)

Elements | Description
--- | ---
Matrix | ‘*Gallus gallus* (fowl) - broilers - before slaughter’.
Sampling stage | ‘Farm’.
Sample type: ‘Environmental sample - boot swabs’ or ‘Environmental sample - dust’ or ‘environmental boot swabs and dust’.

Sampler: ‘Official and industry sampling’.

In addition, the information shall be provided separately for the sampling carried out by the food business operators, according to point 2.1.(a) of the regulation (using ‘census’ in combination with ‘industry sampling’), and for the sampling performed by the competent authority, according to point 2.1.(b) of the regulation (using ‘official sampling’ in combination with the applied sampling strategy).

Table 9: Specific guidelines for reporting data on samples collected in turkeys according to Commission Regulation (EU) No 1190/2012 (target regulation)-for breeding flocks of turkeys

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>For level 1 use ‘Turkeys’; for level 2 use ‘parent breeding flocks’, ‘grandparent breeding flocks’ or ‘elite breeding flocks’; for level 3 use ‘adult’; report the information allocated to different production lines (egg and meat), as well as the level of the production pyramid (elite, grandparent and parent flocks) and separated by age groups (day-old chicks, rearing flocks, adult, unspecified). If results for the different types of breeding flocks are not available, use the ‘breeding flock, unspecified’.</td>
</tr>
<tr>
<td>Sampling stage</td>
<td>‘Farm’ or ‘Hatchery’.</td>
</tr>
<tr>
<td>Sample type</td>
<td>'Animal sample - faeces' or 'Environmental sample - boot swabs'.</td>
</tr>
<tr>
<td>Sampler</td>
<td>‘Official and industry sampling’.</td>
</tr>
</tbody>
</table>

In addition, the information shall be provided separately for the sampling carried out by the food business operators, according to point 2.1.(a) of the regulation (using ‘Census’ in combination with ‘Industry sampling’), and for the sampling performed by the competent authority, according to point 2.1.(b) of the regulation (using ‘Official sampling’ in combination with the applied sampling strategy).

Table 10: Specific guidelines for reporting data on samples collected in turkeys according to Commission Regulation (EU) No 1190/2012 (target regulation)-for fattening flocks of turkeys

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>‘Turkeys - fattening flocks - before slaughter’.</td>
</tr>
<tr>
<td>Sampling stage</td>
<td>‘Farm’.</td>
</tr>
<tr>
<td>Sample type</td>
<td>'Environmental sample - boot swabs’ or ‘Environmental sample - dust’ or ‘Environmental boot swabs and dust’.</td>
</tr>
<tr>
<td>Sampler</td>
<td>‘Official and industry sampling’.</td>
</tr>
</tbody>
</table>

In addition, the information shall be provided separately for the sampling carried out by the food business operators, according to point 2.1.(a) of the regulation (using ‘Census’ in combination with ‘Industry sampling’), and for the sampling performed by the competent authority, according to point 2.1.(b) of the regulation (using ‘Official sampling’ in combination with the applied sampling strategy).

3.2.3. *Salmonella* spp. in animal populations without EU control programmes

**Relevant agent species/serotypes/phagetypes to be reported**

It is recommended that *Salmonella* serovars and phagetypes are reported, where available.

As regards pigs, the serovars *S.* Enteritidis, *S.* Typhimurium and *S.* Infantis should be reported separately. Monophasic *S.* Typhimurium strains should also be included.
Data on monophasic *S. Typhimurium* should be reported as follows: this group comprises *S. Typhimurium* strains lacking the second phase H antigen (1,4,[5],12:i:-18). Whenever feasible, as much detail as possible of the antigenic formula as determined by testing should be reported (e.g. 1,4,[5],12:i:- or 1,4,12:i:-). If the full antigenic formula is not available but a phagetype that is consistent with *S. Typhimurium* lacking phase 2 flagellar antigen has been confirmed, and the lack of the second flagellar antigen has been verified by PCR, then it is recommended that the term ‘monophasic *S. Typhimurium*’ be used.

Specific guidelines for reporting data on *Salmonella* spp. in animal populations without *Salmonella* EU control programmes are summarised in Table 11.

### Table 11: Specific guidelines for reporting data on *Salmonella* spp. in animal populations without EU control programmes

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Ducks and geese: whenever possible, differentiate the types of flocks (e.g. breeding, broiler production and egg production) and the age (e.g. day-old chicks, adult). Pigeons, guinea fowl, pheasants, partridges and ostriches: indicate, when possible, the type of birds (e.g. farmed, wild, pets) and, in the case of wild birds, the animal species. Pigs (both fattening and breeding pigs), cattle, sheep, goats, domestic solipeds. Pet animals (dogs, cats). Wildlife species, such as hedgehogs, are also interesting. As regards domestic poultry, when possible, report the information allocated to the level of the production pyramid (breeding flocks and meat production flocks, or even more specifically) as well as separated by age groups (day-old chicks, young birds during the rearing period, adult, unspecified). In addition, where possible, give the breakdown of the results by different types of cattle (e.g. calves, adults, etc.) and pigs (breeding and fattening pigs).</td>
</tr>
<tr>
<td>Sample type</td>
<td>The sample category and sample type based on the sampling carried out (e.g. ‘Animal sample-faeces’ or ‘Environmental sample-boot swabs’). In the case of poultry, typical specimens collected are blood, dead chicks, dust, environmental samples, faeces, fluff, hatched eggs, hatching eggs, internal linings of delivery boxes, eggshells, meconium, organs and sock/boot swabs. In the case of pigs and cattle, typical specimens are blood, dust, faeces, meat juice, milk and organs (ileocaecal lymph nodes).</td>
</tr>
<tr>
<td>Analytical method</td>
<td>Method recommended by EU Reference Laboratory for <em>Salmonella</em> in Bilthoven, the Netherlands: a modification of ISO 6579:2002/2017 in which a semi-solid medium (MSRV) is used as the single selective enrichment medium. This method is described in Annex D of ISO 6579:2002/2017 and ISO, 2017b. For blood and meat juice: ELISA and other serological methods are used.</td>
</tr>
</tbody>
</table>

### 3.2.4. *Campylobacter* spp. in animals

#### Relevant agent species to be reported

*Campylobacter* spp. differentiation at species level should be provided, where available. The main species of interest are *Campylobacter jejuni* (*C. jejuni*) and *C. coli*, however, *C. lari*, *C. upsaliensis* and *C. helveticus*, which are known to cause human infections, may also be reported. *C. fetus* may also be reported, but it is noteworthy that of the three subspecies of *C. fetus* have been recognized, being *fetus*, *venerealis* and *testudinum*, only *C. fetus* subsp. *fetus* and *testudinum* have been identified as causing disease in humans.

#### Case definition/definition of a positive sample

- **Positive holding/herd/flock/batch/animal**—a holding, herd, flock, batch, animal in which *Campylobacter* spp. have been detected.

- **Positive slaughter batch**—a batch in which *Campylobacter* spp. have been detected in at least one of the samples in the batch or if the agent is confirmed in a pooled sample from this batch.

Specific guidelines for reporting data on *Campylobacter* spp. in animal are presented in Table 12.
Table 12: Specific guidelines for reporting data on *Campylobacter* spp. in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Broilers of <em>Gallus gallus</em>, turkeys, pigs, bovine animals, sheep, birds, dogs, cats and wildlife (e.g. wild birds).</td>
</tr>
<tr>
<td>Sample type</td>
<td>Broiler flocks: intact caeca taken at time of evisceration (caecal content), cloacal swabs; turkeys: cloacal swabs, intact caeca; cattle and pigs: faecal material, rectal swabs; environmental samples (rearing house, environment), e.g. before arrival of the animals, overshoes/sock/boot samples; feed.</td>
</tr>
<tr>
<td>Analytical method</td>
<td>For detection of <em>Campylobacter</em>, the method used is ISO 10272-1: 2006/2017 (ISO, 2006a, 2017g). Speciation of <em>Campylobacter</em> by the use of recognised DNA-based methods, i.e. validated and published PCR methods, is recommended. The method used shall be indicated. PCR is the preferred method for <em>Campylobacter</em> speciation.</td>
</tr>
</tbody>
</table>

3.2.5. *Listeria* spp. in animals

**Case definition/definition of a positive sample**

- **Positive sample**—an animal, a herd or a slaughter batch in which *Listeria* spp. has been detected.

Specific guidelines for reporting data on *Listeria* spp. in animal are presented in Table 13.

Table 13: Specific guidelines for reporting data on *Listeria* spp. in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>A wide variety of animal species can be infected with <em>Listeria</em> spp., but clinical listeriosis is mainly a ruminant disease, affecting sheep, goats and cattle.</td>
</tr>
<tr>
<td>Sample type</td>
<td>Typically, the types of specimens taken are faeces, abortion material, uterus excretions and other clinical specimens, e.g. lesions from liver, spleen or kidneys.</td>
</tr>
</tbody>
</table>

Clinical listeriosis cases in individual animals should be clearly distinguished from those resulting from surveys, monitoring and surveillance schemes (if any) by indicating that the information is coming from ‘clinical investigations’.

3.2.6. *Yersinia* spp. in animals

**Relevant agent species/serotypes/biotypes to be reported**

*Yersinia* spp. differentiation at species level should be provided, whenever possible (e.g. *Yersinia enterocolitica* (*Y. enterocolitica*), *Y. pseudotuberculosis*). For each positive and specified sample, it is recommended to report the main pathogenic *Y. enterocolitica* serotypes (O:3, O:5,27 and O:9) as well as the biotypes (1B, 2, 3, 4, 5). If information on both serotype and biotype is available, the results should be reported as the biotype/serotype combinations, as recommended in the report ‘Technical specifications for harmonised national surveys of *Y. enterocolitica* in slaughter pigs’ (EFSA, 2009b), for example biotype 4/O:3.

**Case definition/definition of a positive sample**

- **Yersinia-positive unit**—an animal, a herd or a slaughter batch in which *Yersinia* spp. has been isolated.

Specific guidelines for reporting data on *Yersinia* spp. in animal are presented in Table 14.
### Table 14: Specific guidelines for reporting data on *Yersinia* spp. in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Pigs, bovine animals, sheep, goats, other (dogs and cats, wildlife animal species).</td>
</tr>
<tr>
<td>Sample type</td>
<td>Tonsils, faeces, caecal content, mesenteric lymph nodes, or blood.</td>
</tr>
<tr>
<td>Analytical method</td>
<td>Detection is usually made by culture methods, e.g. cold enrichment, selective enrichment, direct plating or other. Serological identification may be used for the main pathogenic serotypes. The reference method for the detection of <em>Y. enterocolitica</em> in food (ISO 10273:2003/2017 (ISO, 2003, 2017)) is also applicable for examination of the tonsils and lymph nodes.</td>
</tr>
</tbody>
</table>

### 3.2.7. Verotoxigenic *Escherichia coli* in animals

**Relevant agent species/serotypes to be reported**

Strains of *Escherichia coli* (*E. coli*) which are capable to produce verocytotoxin (VT)/Shiga toxin (Stx) (VTEC) or Shiga toxin-producing *E. coli* (STEC)). It is strongly recommended to report the information on the serogroup (O antigen). Serogroups of particular interest are: O157, O111, O103, O26 and O145.

Information on genes encoding verocytotoxin 1 (*vtx*1), verocytotoxin 2 (*vtx*2) or the respective cytotoxins (VT1, VT2) is essential to be reported or intimin (*eae*), where available, as stated in the report ‘Technical specifications for the monitoring and reporting of verotoxigenic *Escherichia coli* (VTEC) on animals and food’ (EFSA, 2009a), for example VTEC O157 *eae* positive *vtx*1 positive *vtx*2 negative.

Reporting countries are strongly encouraged to submit information on the presence of virulence genes in the VTEC strains using the facet approach.

For the serogroup O104, it is recommended that the virulence characters are reported, including the presence of verocytotoxin VT2 positive (*vtx*2 positive) and enteroaggregative virulence plasmid (*EAgg*+).

The serogroups non-O157 should be differentiated based on the presence/absence of the gene for intimin (*eae*), which is considered to be a marker of potential high virulence.

**Case definition/definition of a positive sample**

- **VTEC-positive animal/herd/flock/sample/batch**—an animal/herd/flock/sample/batch from which VTEC has been isolated.

MSs are strongly encouraged to only report data on STEC/VTEC as indicated in the Directive 2003/99/EC.

It is important to note that the positive result to be reported, according to the Guidance for reporting 2019 data on zoonoses, antimicrobial resistance and food-borne outbreaks (EFSA, 2020), is an *E. coli* isolate producing VT or possessing the *vtx* genes. The correct reporting of the positive results is strongly recommended.

To make the data reporting easier and harmonized across the MSs, the following proposal for data reporting is made:

- **VTEC, serogroup identified**: to be used when a strain carrying the *vtx* genes or producing VT is isolated, and information on the VTEC serogroup is available. The VTEC serogroup identified to be selected from the whole list of VTEC serogroups (From O1 to O...).
- **VTEC non-O157**: to be used only when a strain carrying the *vtx* genes is isolated but its serogroup belongs neither to O157 nor to any of the other serogroups the laboratory is able to detect.
- **VTEC non-(O157, O26, O103, O111, O145)**: to be used only when a strain carrying the *vtx* genes is isolated but its serogroup belongs neither to O157, O26, O103, O111, O145 (the serogroups identified by the ISO/TS13136:2012) nor to any of the other serogroups the laboratory is able to detect.
- **VTEC, unspecified**: to be used only when a strain carrying the *vtx* genes or producing VT is isolated, but no information on the VTEC serogroup is available.
Please consider the following **REMARK:**
- The VTEC, NT (Non Typeable) value is not accepted as this value (VTEC, NT (Non Typeable)) strongly depends on the panel of serotyping reagents available in the laboratories. As a result, the information provided by the MSs with this value is not homogeneous and cannot be analysed, because its merging would be meaningless.

Specific guidelines for reporting data on Verotoxigenic *Escherichia coli* in animal are presented in Table 15.

**Table 15:** Specific guidelines for reporting data on Verotoxigenic *Escherichia coli* in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Cattle, sheep, goats, wild game (ruminants), which are recognised as the principal animal reservoirs.</td>
</tr>
<tr>
<td>Sample type</td>
<td>Rectal faecal samples, hide and fleece swabs (brisket or ears).</td>
</tr>
</tbody>
</table>
| Analytical methods| Details should be provided on the diagnostic method used, including how verification of VTEC is carried out and the serotypes for which screening is carried out. The standard methods ISO/TS 13136:2012 (ISO, 2012), ISO 16654:2001 (ISO, 2001) and NMKL 164:2005 (NMKL, 2005) are intended for testing food and feed, but have been adapted to test animal samples by many reporting countries. In addition, The OIE Manual for Diagnostic Tests and Vaccines for Terrestrial Animals (OIE, 2009a), Chapter 2.9.11, describes a screening method for VTEC O157 in animal faeces. Two main categories of analytical methods are typically used: a) Methods aiming at detecting any VTEC, regardless of the serotype. These methods are usually based on PCR screening of sample enrichment cultures and isolated colonies for the presence of vtx genes, followed by the characterisation of the isolated VTEC strains. This category includes PCR methods based on ISO/TS 13136:2012 (ISO, 2012), adapted to animal samples, other PCR-based methods, and also methods based on the detection of verocytotoxin production by immunoassays. b) Methods designed to detect only VTEC O157, such as the adaptation of method ISO 16654:2001 (ISO, 2001) and the equivalent NMKL 164:2005 (NMKL, 2005). This category of methods also includes the screening method for VTEC O157 in animal faeces, which is described by OIE (OIE, 2009a). VTEC O157 is the serotype most commonly reported in the EU as a cause of both outbreaks and sporadic cases in humans and has also been identified as the major cause of HUS in children. The focus has therefore traditionally been on this serotype in many of the MS surveillance programmes. In case adaptations of the standard methods ISO/TS 13136:2012 (ISO, 2012), ISO 16654:2001 (ISO, 2001) and NMKL 164:2005 (NMKL, 2005) have been used to test animal samples, related information can be reported using the categories of methods available for reporting data on VTEC. The list of analytical methods to be used for reporting on VTEC in animals is presented in the following section ‘specific guidelines for data reporting’. OIE recommended method for the detection of *E. coli* O157 in animal faeces (code 'F602A') or any other cultural methods based on ISO 16654/2001 adapted to animal samples are to be reported under the term 'OIE method for testing *E. coli* O157 in animal faecal samples'(code 'F602A'). PCR methods based on ISO/TS 13136:2012, adapted to animal samples are to be reported under the term 'In house real time PCR methods based on ISO/TS 13136:2012'(code 'F594A') Other methods based on PCR detection of vtx genes (code 'F595A') Unspecified (code 'F598A').

### 3.2.8. *Mycobacteria* spp. in animal species other than bovine animals and farmed deer

**Relevant animal and agent species to be monitored and reported on**

It is recommended to report at *Mycobacterium tuberculosis* complex level even if *Mycobacterium bovis* (*M. bovis*) was excluded. According to the epidemiological situation, other species (than *M. bovis*) that belong to the *Mycobacterium tuberculosis* complex such as *Mycobacterium tuberculosis* (*M. tuberculosis* senso stricto), *M. caprae*, *M. africanaum*, *M. microti*, *M. canetti*, *M. pinnipedii*, *M. mungi* and *M. orygis* may be reported in animals such as sheep, goats, pigs and wild deer, camelids (alpacas), zoo animals, pet animals and wildlife (wild ruminants, badgers, wild boar and wild birds).
Typical interesting information to be reported

- Results of routine post-mortem examination at slaughterhouse (visual meat inspection).
- Results of bacteriological examination of the animal species (confirmation assays).
- Results of serological tests or other tests (skin test, interferon-gamma); describe the test used and other relevant information.

Specific guidelines for reporting data on *Mycobacteria* spp. in animal species other than bovine animals and farmed deer are presented in Table 16.

**Table 16**: Specific guidelines for reporting data on *Mycobacteria* spp. in other animal species other than bovine animals and farmed deer

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>The relevant animal species and category (e.g. cattle (bovine animals), sheep, goats, pigs and wild deer).</td>
</tr>
<tr>
<td>Sampling stage</td>
<td>Where the samples have been collected (e.g. 'Farm', 'Slaughterhouse') should be reported.</td>
</tr>
<tr>
<td>Sample origin</td>
<td>This allows for further characterisation of the country of origin.</td>
</tr>
<tr>
<td>Sample type</td>
<td>The sample category and sample type should be reported here (e.g. 'Animal sample - blood').</td>
</tr>
<tr>
<td>Sampling context</td>
<td>Information on the context of the sampling (e.g. 'Surveillance') should be reported.</td>
</tr>
<tr>
<td>Sampler</td>
<td>It defines who performed the sampling should be reported (e.g. 'Official sampling' or 'Industry sampling').</td>
</tr>
<tr>
<td>Sampling strategy</td>
<td>The type of sampling should be reported (e.g. 'Objective sampling', 'Census', 'Suspect sampling').</td>
</tr>
<tr>
<td>Area of sampling</td>
<td>This data element that should be used to give further information on the area, region or province of the sampling in which the animal/food/feed sample has been collected according to the NUTS coding system.</td>
</tr>
<tr>
<td>Source of information</td>
<td>The institute (or laboratory) that has provided the data. Abbreviations should be clarified in the text forms.</td>
</tr>
<tr>
<td>Total units tested</td>
<td>The number of sampling units that are analysed in the laboratory, or tested in another way, in total, and for which results are available. A sampling unit (e.g. Flock) should not be counted twice even if it has been checked more than once for a specific zoonotic agent.</td>
</tr>
<tr>
<td>Total units positive</td>
<td>The total number of sampling units considered infected (contaminated) based on the testing results for <em>Mycobacterium</em>. In case that no positive units were detected, a ‘0’ (zero) should be reported.</td>
</tr>
<tr>
<td>Units positive</td>
<td>The number of units considered infected based on the testing results for the specific <em>Mycobacterium tuberculosis</em> complex species (e.g. <em>M. bovis, M. caprae</em>).</td>
</tr>
</tbody>
</table>

3.2.9. **Brucella** spp. in animal species other than bovine animals, sheep and goats

Brucellosis in other animal than cattle, sheep and goats should be reported in the prevalence data model.

**Relevant animal and agent species to be reported on**

It is recommended, depending on the epidemiological situation, that information is reported on *Brucella* species with zoonotic potential, meaning all *Brucella* species except *B. ovis* and *B. neotomae*, which are not known to be pathogenic for humans.

Reportable data relate to isolations of *B. abortus, B. melitensis, B. suis* and *B. canis* in wildlife (mainly ruminants, wild boar and hares), zoo animals, pet animals (mainly dogs used in herd/holding management) and other farm animals (pigs). *B. ceti* and *B. pinnipedialis*, recently discovered in marine mammal species, seem to be able to infect some terrestrial mammals like polar bears, and rare clinical cases have been reported in humans. Additional interesting information to be reported.

Results of serological tests and bacteriological examinations in all animals (specify units tested by serological methods and units tested by bacteriological examinations).
Specific guidelines for reporting data on *Brucella* spp. in other animal species than cattle, sheep and goats are presented in Table 17.

**Table 17:** Specific guidelines for reporting data on *Brucella* spp. in animal species other than cattle, sheep and goats

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>The relevant animal species and category (e.g. wild boar, dogs).</td>
</tr>
<tr>
<td>Sampling stage</td>
<td>where the samples have been collected (e.g. 'Farm', 'Slaughterhouse') should be reported</td>
</tr>
<tr>
<td>Sample origin</td>
<td>This allows for further characterisation of the country of origin.</td>
</tr>
<tr>
<td>Sample type</td>
<td>e.g. 'Animal sample - blood'.</td>
</tr>
<tr>
<td>Sampling context</td>
<td>e.g. 'Surveillance'.</td>
</tr>
<tr>
<td>Sampler</td>
<td>e.g. 'Official sampling' or 'Industry sampling'.</td>
</tr>
<tr>
<td>Sampling strategy</td>
<td>e.g. 'Objective sampling', 'Census', 'Suspect sampling').</td>
</tr>
<tr>
<td>Area of sampling</td>
<td>Free text to be used for further information on samples.</td>
</tr>
<tr>
<td>Sampling unit</td>
<td>The sampling unit is typically 'Animal', 'Herd' or 'Holding' or 'Slaughter batch'.</td>
</tr>
<tr>
<td>Source of information</td>
<td>The institute (or laboratory) that has provided the data. Abbreviations should be clarified in the text forms.</td>
</tr>
<tr>
<td>Total units tested</td>
<td>The number of sampling units that are analysed in the laboratory, or tested in another way, in total, and for which results are available. A sampling unit (e.g. flock) should not be counted twice even if it has been checked more than once for a specific zoonotic agent.</td>
</tr>
<tr>
<td>Total units positive</td>
<td>The total number of sampling units considered infected (contaminated) based on the testing results for <em>Brucella</em>. In case that no positive units were detected, a '0' (zero) should be reported.</td>
</tr>
<tr>
<td>Units positive</td>
<td>The number of units considered infected based on the testing results for the <em>Brucella</em> species (e.g. <em>B. abortus</em>, <em>B. melitensis</em>, <em>B. suis</em>, <em>B. canis</em>). A herd/flock can be reported as seropositive for <em>Brucella</em> using serological screening methods but not be confirmed by confirmation methods (isolation).</td>
</tr>
</tbody>
</table>

3.2.10. *Coxiella burnetii* (Q fever) in animals

**Relevant agent species to be reported**

*Coxiella burnetii* (*C. burnetii*).

**Case definition/definition of a positive sample**

A **positive case** is an animal/herd that tested positive for *C. burnetii* on the test carried out by a serological test or PCR, in accordance with the OIE Manual of Diagnostic Test and Vaccines for Terrestrial Animals (OIE, 2009b) or by isolation of the agent, staining, or immunofluorescence assay test (IFA).

It is recommended to describe in the text forms how a positive herd/flock is defined: as an example, a positive herd/flock may be defined as:

- a herd/flock on which at least one animal is seropositive by ELISA;
- a herd/flock on which at least one animal is tested positive in PCR;
- a herd/flock on which a seropositive bulk milk sample was found;
- a herd/flock on which (bulk)milk samples were found positive in PCR.

Specific guidelines for reporting data on *C. burnetii* in animal are presented in Table 18.

**Table 18:** Specific guidelines for reporting data on *Coxiella burnetii* in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Cattle, sheep and goats, other mammals, birds, wildlife and arthropods. Reporting of information on animal production type (e.g. dairy cows, milk goats/sheep, meat production animals, and calves) is recommended, if available.</td>
</tr>
<tr>
<td>Sample type</td>
<td>For serological method: coagulated blood, serum; when analysed by PCR: aborted placenta, abortion materials, vaginal swabs, faeces, milk.</td>
</tr>
<tr>
<td>Analytical methods</td>
<td>Serological testing: ELISA or CFT in animals.</td>
</tr>
<tr>
<td>Elements</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Isolation of the agent by cell culture or identification by PCR (conventional or real-time PCR), IFA, FISH or immunohistochemistry (ICH). It is recommended that the type of test (serological or PCR) is always reported in order to ease the interpretation of the results. In order to facilitate the correct interpretation of the results reported it is mandatory to report the type of diagnostic method used (e.g. serology, PCR, direct isolation) in the analytical method data element.</td>
<td></td>
</tr>
</tbody>
</table>

3.2.11. *Trichinella* spp. in animals

**Relevant agent species to be reported**

*Trichinella spiralis* (*T. spiralis*) and other zoonotic species, such as *T. britovi*, *T. nativa* and *T. pseudospiralis*. *T. nativa* is a cold-resistant species and circulates only among carnivores living in cold regions (in Arctic and sub-Arctic regions of some northern European countries). All the other *Trichinella* species are detected in animals or meat derived products imported from outside the European countries.

**Methods of sampling/frequency of sampling/location of sampling**

Detailed sampling methods and procedures used during meat inspection at slaughterhouse level are laid down in Commission Regulation (EC) 2015/1375 with the amendments.

**Case definition/definition of a positive sample (animal)**

- **Positive animal**—animal in which *Trichinella* sp. larvae have been detected.

Specific guidelines for reporting data on *Trichinella* spp. in animal are presented in Table 19.

**Table 19:** Specific guidelines for reporting data on *Trichinella* spp. in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Matrix** | Pigs (breeding pigs (sows and boars) and fattening pigs), horses, carnivorous game animals, e.g. farmed and wild boar, bears, foxes, raccoon dogs, lynxes, rats, badgers, wolves and stone martens. The information whether or not the pigs were raised under officially approved controlled housing conditions shall be reported. Furthermore, information on fattening or breeding sows and boars shall be reported. These options are available in the animal species catalogue ZOO_CAT_MATRIX, therefore pigs should be reported under the following categories:  
- fattening pigs raised under recognised controlled housing conditions;  
- fattening pigs not raised under recognised controlled housing conditions;  
- backyard and free-range pigs;  
- breeding sows raised under recognised controlled housing conditions;  
- breeding boars raised under recognised controlled housing condition;  
- breeding sows not raised under recognised controlled housing conditions;  
- breeding boars not raised under recognised controlled housing conditions.  
Wildlife (farmed and wild)—generally, it is recommended that information about the farmed or wild status of animal species be reported in the case of animal species that can have either status. |
| **Sample type** | Diaphragm muscles or tongue are typically taken during meat inspection. |
| **Sampling unit** | Is typically 'Animal'. |
| **Area of sampling** | Information on the region from which the data originate is strongly recommended to be reported; the NUTS standards are made available in the specific catalogue. Please refer to Appendix D for practical examples on regional reporting. |
| **Analytical methods** | Methods for detection of *Trichinella* in fresh meat are specified in Commission Regulation (EC) 2015/1375:  
- Magnetic stirrer method for pooled sample digestion;  
- Equivalent methods to pooled sample digestion methods:  
  - mechanically assisted pooled sample digestion method/sedimentation technique;  
  - mechanically assisted pooled sample digestion method/on filter isolation technique;  
  - automatic digestion method for pooled samples of up to 35 g. |
### Elements

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>– magnetic stirrer method for pooled sample digestion/on filter isolation and larva detection by a latex agglutination test (only equivalent for testing meat of domestic swine).</td>
</tr>
<tr>
<td>– artificial digestion test for in vivo detection of <em>Trichinella</em> spp. larvae in meat samples, PrioCheck <em>Trichinella</em> AAD Kit (only equivalent for testing meat of domestic swine).</td>
</tr>
</tbody>
</table>

Trichinoscopic examination: this method is considered not suitable anymore according Regulation 2015/1375.

For horses and animal species other than pigs the prescribed method is the digestive method (as it is described in the Annex III of Commission Regulation (EC) 2015/1375).

### 3.2.12. *Echinococcus* spp. in animals

For the purpose of following trends the information to be reported is:

— *Echinococcus multilocularis* (*E. multilocularis*) in red foxes.

### Relevant agent species to be reported

**E. granulosus** and **E. multilocularis**. The relevant *Echinococcus* species should be reported, whenever possible, in order to facilitate analyses of the data. Reporting of the zoonotic strains/(sub)species most prevalent in Europe (G1, G3, G5) is also encouraged.

### Case definition/definition of a positive sample

- **E. multilocularis** positive animal—animal with a positive test result for eggs in faeces or adult worms in the gut.

- **E. granulosus** positive animal—animal in which *E. granulosus* cysts have been detected. Important additional information is the cyst fertility.

Specific guidelines for reporting data on *Echinococcus* spp. in animal are presented in Table 20.

### Table 20: Specific guidelines for reporting data on *Echinococcus* spp. in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>For <em>E. granulosus</em>: sheep, goats, cattle, pigs and domestic solipeds; other animal species, such as camels, reindeer, (rein)deer, moose, mouflons and wild boar; For <em>E. multilocularis</em>— definitive hosts: foxes, dogs, cats and other wild animal species, such as raccoon dogs and wolves; For <em>E. multilocularis</em>— intermediate hosts: voles, musk rats and other rodents.</td>
</tr>
<tr>
<td><strong>Sample type</strong></td>
<td>For <em>E. granulosus</em>: typically, the hydatid cysts from viscera of intermediate hosts. For <em>E. multilocularis</em>: faeces or intestine from definitive hosts.</td>
</tr>
<tr>
<td><strong>Sampling unit</strong></td>
<td>Is typically ‘Animal’.</td>
</tr>
<tr>
<td><strong>Area of sampling</strong></td>
<td>Information on the region from which the data originate is strongly recommended to be reported and it is mandatory for countries reporting <em>E. multilocularis</em> data to demonstrate freedom from disease; the NUTS standards are made available in the specific catalogue. Please refer to Appendix D for practical examples on regional reporting.</td>
</tr>
<tr>
<td><strong>Analytical methods</strong></td>
<td>For <em>E. granulosus</em>: post-mortem visual examination of intermediate hosts, in the context of meat inspection procedures established in Regulations (EC) No 854/200420 (including the last...</td>
</tr>
</tbody>
</table>

---

19 *Echinococcus granulosus*, formerly regarded as a single species, is now recognised as a complex of cryptic species. Based on phenotypic characters and gene sequences, *E. granulosus* sensu lato circulating in Europe has by now been subdivided into *E. granulosus* sensu stricto (the ‘sheep strain’ and ‘buffalo strain’, genotypes G1 and G3), *Echinococcus equinus* (the ‘horse strain’, G4), *Echinococcus ortleppi* (the ‘cattle strain’, G5) and *Echinococcus canadensis* (the ‘camel strain’, G6; the ‘pig strain’, G7; two ‘cervid strains’, G8 and G10).

3.2.13. **Toxoplasma** spp. in animals

**Relevant agent species to be reported**

*Toxoplasma gondii* (*T. gondii*).

**Case definition/definition of a positive sample**

- **Positive animal**—animal with a positive test result for *Toxoplasma*.

Specific guidelines for reporting data on *Toxoplasma* spp. in animal are presented in Table 21.

**Table 21**: Specific guidelines for reporting data on *Toxoplasma* spp. in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Sheep, goats, pigs (pigs from organic and free-range farms) and cats.</td>
</tr>
<tr>
<td>Sample type</td>
<td>Typically, blood samples are tested by indirect detection methods (serology). Other samples could include abortion material (e.g. sheep) or faeces (e.g. cats) that are tested with direct methods (e.g. PCR, histology).</td>
</tr>
<tr>
<td>Sampling context</td>
<td>A clear indication should be made in order to differentiate clinical investigations (‘clinical investigations’) from those resulting from ‘monitoring’ or ‘surveillance’.</td>
</tr>
<tr>
<td>Sampling details</td>
<td>The animal age is an important parameter to report. For pigs it is important to mention the type of farming.</td>
</tr>
<tr>
<td>Analytical methods</td>
<td>Indirect serological methods (describe or include reference): ELISA, MAT, LAT, immunoblotting (IB) and immunofluorescence antibody test (IFAT). If other methods (direct methods) are used, they should be specified (e.g. PCR).</td>
</tr>
<tr>
<td>Vaccination status</td>
<td>It is recommended to provide the vaccination status of the animals/flocks/herds (e.g. in small ruminants) if applied and to indicate clearly the case definition (e.g. how flocks/herds are defined as positive <em>Toxoplasma</em>).</td>
</tr>
</tbody>
</table>

3.2.14. **Cysticercus** spp. in animals

**Relevant agent species to be reported**

- Cysticerci of *Taenia saginata* (*T. saginata*) (metacestode stage of the human tapeworm *T. saginata*, called *Cysticercus bovis* in cattle).
- Cysticerci of *Taenia solium* (*T. solium*) (metacestode stage of the human tapeworm *T. solium*, called *Cysticercus cellulosae* in pigs).

It is important to report species information on cysticercus (e.g. *T. solium* in pigs, *T. saginata* in bovine) to facilitate the analyses of the data.

---


Case definition/definition of a positive sample

- **Positive animal**—animal in which cysticerci have been detected.

Specific guidelines for reporting data on *Cysticercus* spp. in animal are presented in Table 22.

**Table 22:** General guidelines for reporting data on *Cysticercus* spp. in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Cattle, pigs and wild boar. For cattle, data should be reported separately for the different types of animals (dairy cows, meat production animals or calves), if available.</td>
</tr>
<tr>
<td><strong>Sample type</strong></td>
<td>Typically, the masseter muscle, tongue and heart are incised and examined and the intercostal muscles and diaphragm inspected. The triceps muscle is also incised in many countries.</td>
</tr>
<tr>
<td><strong>Sampling details</strong></td>
<td>For pigs it is important to mention the type of farming.</td>
</tr>
<tr>
<td><strong>Analytical methods</strong></td>
<td>By visual inspection, in the context of meat inspection procedures established in Regulation (EC) No 854/2004, including the last amendments laid down in Regulation (EU) No 218/2014 and Commission Implementing Regulation (EU) 2019/627 (which came into force on 14 December 2019) Microscopic examination is also used for diagnosis/confirmatory purposes. Confirmatory testing is done by PCR. It is recommended that the diagnostic method used is always reported or that reference is made to visual post-mortem inspection.</td>
</tr>
</tbody>
</table>

3.2.15. Rabies in animals

**Relevant agent species to be reported**

Information on the *Lyssavirus* species is of particular interest. It is recommended that, whenever possible, the differentiation between European bat *Lyssavirus* (EBLV-1 or EBLV-2) and rabies virus (RABV) is made. If no information is available on the virus species, ‘*Lyssavirus* (unspecified virus)’ should be used for reporting data.

It is highly recommended that for positive samples the species is clearly identified (e.g. RABV, or EBLV-1 or EBLV2).

Countries that receive EU co-financing (eradication and vaccination programmes) for rabies in 2019 are: Bulgaria, Croatia, Estonia, Finland, Greece, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

**Case definition**

A case is any animal infected with the rabies virus species (OIE, 2013a).

Specific guidelines for reporting data on *Lyssavirus* in animal are presented in Table 23.

**Table 23:** Specific guidelines for reporting data on *Lyssavirus* in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>All domestic animal species, including pets and farm animals and wildlife animals, especially dogs and cats, including stray dogs and stray cats. Typically, the domestic farm animals to be reported on are species kept in free-range production systems, such as sheep, goats or bovine animals. Wildlife species are foxes, raccoon dogs, wolves and badgers. Bats that are known to harbour bat-type <em>Lyssavirus</em> should also be reported on.</td>
</tr>
<tr>
<td><strong>Sample type</strong></td>
<td>e.g. ‘Animal sample - brain’.</td>
</tr>
<tr>
<td><strong>Sampling unit</strong></td>
<td>Is typically ‘Animal’.</td>
</tr>
<tr>
<td><strong>Area of sampling</strong></td>
<td>Information on the region from which the data originate is strongly recommended to be reported; the NUTS standards are made available in the specific catalogue.</td>
</tr>
</tbody>
</table>
3.2.16. West Nile virus in animals

Relevant agent species to be reported
West Nile virus (WNV)

Definition of a positive sample

- Positive animal: animal with a positive test result for WNV.

In the context of this reporting, the definition of positive animal does not take into account the occurrence of clinical signs.\(^\text{24}\)

The use of equine WNV vaccine may decrease the incidence of WNV disease, but influences also results in serological assays used for WNV. For this reason, information on whether or not the horses were vaccinated is recommended for the correct interpretation of positive test results.

Specific guidelines for reporting data on West Nile virus in animal are presented in Table 24.

Table 24: Specific guidelines for reporting data on West Nile virus in animal

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
</table>
| Matrix   | Equids, wild birds* (including synanthropic birds), and domestic birds (including poultry and birds other than poultry).  
*Wild birds such as corvids, crows, jays, magpies, pigeons, doves, Passeriformes and Passeriformes other than corvids. |
| Sample type | Equids: blood serum (used for indirect diagnosis).  
Wild birds: blood serum (used for indirect diagnosis), quills and feathers, whole blood, pool of organs (kidney, spleen, brain, heart) (used for direct diagnosis). |
| Area of sampling | Information on the region from which the data originate is strongly recommended to be reported; the NUTS standards are made available in the specific catalogue.  
Please refer to Appendix D for practical examples on regional reporting. |
| Analytical methods | Horses:  
SeroLOGY: ELISA test based on detection of IgM (recommended method to detect acute infection), ELISA test based on IgG detection.  
Confirmatory sero-neutralisation (sero-neutralisation tests allow discrimination between infections by different flaviviruses; information on the use of these confirmatory tests is to be provided, when available, in addition to the serological test).  
Data from reverse transcription PCR (RT-PCR) on blood can also be reported, where available. It is, however, to be noted that equine tissues generally contain lower concentrations of the virus than birds, and the duration of viraemia is very short.  
Wild birds:  
RT-PCR, ELISA tests (same consideration as above for horses);  
Confirmatory sero-neutralisation. |

\(^{24}\) Refer to Chapter 8.16 of the OIE _Terrestrial Animal Health Code_ (Volume II) for the detailed criteria that define the occurrence of West Nile fever (OIE, 2009b).
### Elements | Description
---|---
Vaccination status | ‘Yes’, ‘No’, ‘Unknown’.

Further details on the proposal for data collection on vector-borne zoonoses in animals can be found in the external scientific report by Mannelli et al. (2012).

### 3.3. Specific guidelines in food and feed

Specific guidelines for reporting data on zoonoses in food and feed are summarised in Table 25.

**Table 25:** Specific guidelines for reporting data on zoonoses in food and feed

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>The food categories specifically recommended to be reported are highlighted by <strong>bold text</strong> in the specific tables.</td>
</tr>
<tr>
<td>Sample origin</td>
<td>Report the country of origin of the animal.</td>
</tr>
<tr>
<td>Sampling stage</td>
<td>e.g. ‘Farm’, ‘Slaughterhouse’, ‘Processing plant’, ‘Retail’, and ‘Border inspection post’. For <em>Salmonella</em>, <em>Campylobacter</em>, <em>Yersinia</em> and VTEC it is highly recommended to report data derived from the slaughterhouse, as a minimum. For all zoonotic agents in foodstuffs, reporting sampling at ‘Retail’ and/or ‘Processing plant’ is recommended.</td>
</tr>
<tr>
<td>Sample type</td>
<td>The sample category and sample type based on the sampling carried out (e.g. ‘Food sample - carcase swabs’ or ‘Food sample - milk’).</td>
</tr>
<tr>
<td>Sampling context</td>
<td>e.g. ‘Monitoring’, ‘Surveillance’, ‘Surveillance, based on Regulation 2073/2005’.</td>
</tr>
<tr>
<td>Sampler</td>
<td>e.g. ‘Official sampling’ or ‘Industry sampling’ or ‘HACCP and own checks’.</td>
</tr>
<tr>
<td>Sampling strategy</td>
<td>e.g. ‘Objective sampling’, ‘Census’, ‘Suspect sampling’.</td>
</tr>
<tr>
<td>Sampling details</td>
<td>Free text to be used for further information on samples.</td>
</tr>
<tr>
<td>Sampling unit</td>
<td>‘Single’ or ‘Batch’.</td>
</tr>
<tr>
<td>Sample weight</td>
<td>The weight or volume of the specimen used in the laboratory for analysis, e.g. 10, etc.; for carcase swabs the area swabbed should be reported (e.g. 100).</td>
</tr>
<tr>
<td>Sample weight unit</td>
<td>The unit of the indicated sample weight e.g. gram, millilitre, and square centimetre.</td>
</tr>
<tr>
<td>Source of information</td>
<td>Institute (or laboratory) that has provided the data. Abbreviations should be clarified in the text forms.</td>
</tr>
<tr>
<td>Total units tested</td>
<td>The number of sampling units that are analysed in total, and for which results are available.</td>
</tr>
<tr>
<td>Total units positive</td>
<td>The total number of sampling units considered positive for specific zoonotic agent at level 1 based on the results of the analyses reported. In case that no positive units were detected, a 0 (zero) should be reported.</td>
</tr>
<tr>
<td>Units positive</td>
<td>The number of sampling units considered positive for specific zoonotic agent at level 2 (e.g. <em>Campylobacter jejuni</em>, <em>Campylobacter coli</em>).</td>
</tr>
</tbody>
</table>

Datasets that will be summarised at EU- and MS-level for trend watching over time are the proportion (%) positive single samples, taken by the Competent Authorities (Sampler = ‘Official sampling’), within the context of surveillance, based on Regulation 2073/2005.

### 3.3.1. *Salmonella* spp. in food


Related to Regulation (EU) No 1086/2011, the following data and information can be reported: *S. Typhimurium*, monophasic *S. Typhimurium only* 1,4,[5],12::i:-18 and *S. Enteritidis* in fresh poultry meat from breeding flocks of *Gallus gallus* as well as laying hens and broilers and breeding and fattening flocks of turkeys.
Datasets that will be summarised at EU- and MS-level for trend watching over time are the proportion (%) of positive single samples, taken by the Competent Authorities (Sampler = 'Official sampling').

Based on the requirements laid down in Commission Regulation (EU) No 218/2014, MSs are requested to report the total number and the number of *Salmonella*-positive samples, differentiating between samples taken under the points listed below, when applied, in order to verify the correct implementation by food business operators of the process hygiene criterion for *Salmonella on pig carcasses* (Table 26).

**Table 26:** Requirements for samples tested according Regulation (EU) No 854/2004

<table>
<thead>
<tr>
<th>Zoonoses</th>
<th>Matrix</th>
<th>Specification</th>
<th>Sampling context</th>
<th>Sampler</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Salmonella</em> spp.</td>
<td>Meat from pig – carcass ('A004161A')</td>
<td>Official sampling using the same method and sampling area as food business operators. At least 49$^{(a)}$ random samples shall be taken in each slaughterhouse each year. This number of samples may be reduced in small slaughterhouses based on a risk evaluation.</td>
<td>Surveillance, based on Regulation 2073 (K034A)</td>
<td>Official, based on Regulation 854/2004 (CX06A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information on the total number and the number of <em>Salmonella</em>-positive samples taken by food business operators in accordance with Article 5(5) of Regulation (EC) No 2073/2005, within the frame of point 2.1.4 of Annex I thereof.</td>
<td>Surveillance, based on Regulation 2073 (K034A)</td>
<td>HACCP and own checks (CX04A) or Industry sampling (CX01A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information on the total number and the number of <em>Salmonella</em>-positive samples taken within the frame of national control programmes in MSs or regions of MSs for which special guarantees have been approved in accordance with Article 8 of Regulation (EC) No 853/2004 as regards pork production.</td>
<td>Surveillance, based on Regulation 2073 (K034A) or Control and eradication programmes (K021A)</td>
<td>Official sampling (CX02A) or Official, based on Regulation 854/2004 (CX06A) or Industry sampling (CX01A)</td>
</tr>
</tbody>
</table>

$^{(a)}$: If all negative, 95% statistical certainty is provided that the prevalence is below 6%.

Commission Implementing Regulation (EU) 2019/627 (which came into force on 14 December 2019) requires the competent authorities to verify the correct implementation by food business operators of points 2.1.3, 2.1.4 and 2.1.5 of Chapter 2 of Annex I of Regulation (EC) No 2073/2005 by applying one or more of the following measures:

(a) official sampling using the same method and sampling area as food business operators. At least 49 random samples$^{25}$ shall be taken in each slaughterhouse each year. This number of samples may be reduced in small slaughterhouses based on a risk evaluation;

(b) collecting all information on the total number and the number of *Salmonella*-positive samples taken by food business operators in accordance with Article 5 of Regulation (EC) No 2073/2005, in the framework of points 2.1.3, 2.1.4 and 2.1.5 of Chapter 2 of Annex I thereto;

(c) collecting all information on the total number and the number of Salmonella-positive samples taken in the framework of national control programmes in Member States or regions of Member States for which special guarantees have been approved in accordance with Article 8 of Regulation (EC) No 853/2004 as regards ruminant, equine, swine and poultry production.

The total number and the number of *Salmonella*-positive samples, differentiating between samples taken under points (a), (b) and (c), when applied, shall be reported in accordance with Article 9(1) of Directive 2003/99/EC.

---

$^{25}$ If all are negative, 95% statistical certainty is provided that the prevalence is below 6%.
Relevant agent species/serovars/phagetypes to be reported

*Salmonella* serovars and where available phagetypes in food should be reported.

Case definition/definition of a positive sample

- **Salmonella-positive sample**—a sample in which *Salmonella* spp. have been isolated.
- **Salmonella-positive batch**—a batch in which *Salmonella* spp. have been isolated from at least one single sample taken out of the batch.

Specific guidelines for reporting data on *Salmonella* spp. in food are presented in Table 27.

### Table 27: Specific guidelines for reporting data on *Salmonella* spp. in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Matrix**                            | • **Meat and products thereof**—information should be provided on the animal species from which the meat is derived and the nature of the meat, e.g. carcase, fresh meat, minced meat, meat preparations, meat products. The reporting of data on bovine meat, pig meat, broiler meat and turkey meat is recommended. More detailed information on the status of the meat at the point of sampling (e.g. frozen, cooked) and how it is intended to be consumed (e.g. intended to be eaten raw, intended to be eaten cooked) should be provided where relevant and available.  
  • **Milk and dairy products**—information should be provided on the nature of the food, e.g. milk, cheese or other dairy products. For milk and cheese, it is useful to report the animal species from which the food is derived, e.g. cow, sheep, goat. More detailed information on milk (e.g. pasteurised or raw/low heat-treated milk), on cheese (e.g. hard or soft and semi-soft cheese) and on other dairy products (e.g. made from pasteurised or raw/low heat-treated milk) should be provided where available.  
  • **Egg and egg products**—information should be provided on the nature of the food, i.e. eggs or egg products. More detailed information on eggs (e.g. table eggs or liquid egg to be used for egg products) and on egg products (e.g. liquid, dried, pasteurised, and frozen) should be provided where available.  
  • **Fish and fishery products, live bivalve molluscs, frogs’ legs and snails**—information should be provided on the nature of the food, e.g. crustaceans, molluscan shellfish, live bivalve molluscs, other fish and frogs’ legs. More detailed information on the specific type of food (e.g. shrimps, lobsters, oysters) and the status of the food at the point of sampling (e.g. raw, cooked, smoked and frozen) should be provided where relevant and available.  
  • **Fruit and vegetables**—information should be provided on the nature of the food (e.g. fruit, vegetables, sprouted seeds, salad) and the status of the food at the point of sampling (e.g. pre-cut/non-pre-cut fruit and vegetables, ready-to-eat/non-ready-to-eat sprouted seeds).  
  • **Juices**—information should be provided on the nature of the food (e.g. fruit or vegetable juice) and the status of the food at the point of sampling (e.g. pasteurised/non-pasteurised).  
  • **Other foods**—e.g. ready-to-eat foods containing raw egg, infant formulae, formulae for special medical purposes and follow-on formulae. |


Data on monophasic *S*. Typhimurium should be reported as follows: this group comprises *S*. Typhimurium strains lacking the second phase H antigen (1,4,[5],12:i-: 18). Whenever feasible, as much detail as possible of the antigenic formula as determined by testing should be reported (e.g. 1,4,[5],12:i-: or 1,4,12:i-:). If the full antigenic formula is not available, but a phagetype that is consistent with *S*. Typhimurium lacking phase 2 flagellar antigen has been confirmed, and the lack of the second flagellar antigen has been verified by PCR, then it is recommended that the term ‘monophasic *S*. Typhimurium’ be used.

3.3.2. *Salmonella* spp. in feed

Relevant agent species/serovars/phagetypes to be reported

*Salmonella* serovars and phagetypes, where available.
Case definition/definition of a positive sample

- **Salmonella-positive sample**—a sample in which *Salmonella* spp. have been isolated.
- **Salmonella-positive batch**—a batch in which *Salmonella* spp. have been isolated from at least one single sample taken out of the batch.

Specific guidelines for reporting data on *Salmonella* spp. in feed are presented in Table 28.

**Table 28**: Specific guidelines for reporting data on *Salmonella* spp. in feed

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>- Feed material of animal origin, e.g. meat and bone meal, fish meal, animal fat, fish oil or compound (both of land and marine sources).</td>
</tr>
<tr>
<td></td>
<td>- Feed material of vegetable origin, either of cereal (e.g. barley, wheat, maize) or oil seed/fruit/vegetable source (e.g. groundnut, soya, cotton and sunflower) or compound vegetable source.</td>
</tr>
<tr>
<td></td>
<td>- Compound feedingstuffs (from both animal and vegetable origin), subcategorised according the animal species of destiny—cattle, pigs, poultry (subcategorised as for breeders, laying hens, broilers, if possible, or not specified) and pets.</td>
</tr>
<tr>
<td><strong>Sampling stage</strong></td>
<td>e.g. 'Feed mill'.</td>
</tr>
<tr>
<td><strong>Sample type</strong></td>
<td>'Feed sample'.</td>
</tr>
</tbody>
</table>

Data on monophasic *S.* Typhimurium should be reported as following: this group comprises *S.* Typhimurium strains lacking the second phase H antigen (1,4,[5],12:i:- 18). Whenever feasible, as much detail as possible of the antigenic formula as determined by testing should be reported (e.g. 1,4,[5],12:i:- or 1,4,12:i:-). If the full antigenic formula is not available, but a phagetype that is consistent with *S.* Typhimurium lacking phase 2 flagellar antigen has been confirmed, and the lack of the second flagellar antigen has been verified by PCR, then it is recommended that the term 'monophasic *S.* Typhimurium' be used.

### 3.3.3. *Campylobacter* spp. in food

Of particular interest are the food categories for which microbiological criteria are set in Regulation (EC) No 2073/2005. Based on the requirements laid down in Commission Regulation (EU) No 2017/1495, food business operators must comply, since 1 January 2018, with a limit of 1,000 colony-forming units (cfu)/g applied to a set of 50 samples derived from 10 consecutive sampling sessions. They must carry out corrective actions if the sample is unsatisfactory. Table 29 displays reporting elements related to this *Campylobacter* process hygiene criterion. Reporting involves the total number and the number of *Campylobacter*-positive samples or sampling units, differentiating between samples taken under the points listed below, when applied, in order to verify the correct implementation by food business operators of the process hygiene criterion for *Campylobacter on broiler carcases*. Quantitative results (≤ 1,000 or > 1,000 cfu/g) obtained from the enumeration method of *Campylobacter* should be reported. It is strongly recommended to provide more detailed enumeration information results according the following multi-category outcomes:

- > 10,000
- > 1,000 - ≤ 10,000
- > 100 - ≤ 1,000
- > 40 - ≤ 100
- > 10 - ≤ 40
- ≤ 10

For the food category 'Meat from broilers – carcase - chilled' for which the criterion ≤ 1,000 cfu/g has been set.
Datasets that will be summarised at EU- and MS-level for trend watching over time are the proportion (%) of positive single samples, taken by the Competent Authorities (Sampler = 'Official sampling').

Commission Implementing Regulation (EU) 2019/627 (which came into force on 14 December 2019) requires the competent authorities to verify the correct implementation by food business operators of point 2.1.9 (process hygiene criterion for *Campylobacter* on carcases of broilers) of Chapter 2 of Annex I of Regulation (EC) No 2073/2005 by applying the following measures:

(a) official sampling using the same method and sampling area as food business operators. At least 49 random samples shall be taken in each slaughterhouse each year. This number of samples may be reduced in small slaughterhouses based on a risk evaluation; or

(b) collecting all information on the total number and the number of *Campylobacter* samples with more than 1 000 cfu/g taken by food business operators in accordance with Article 5 of Regulation (EC) No 2073/2005, in the framework of point 2.1.9 of Chapter 2 of Annex I thereto.

The total number and the number of *Campylobacter* samples with more than 1 000 cfu/g, differentiating between samples taken under points (a) and (b), when applied, shall be reported in accordance with Article 9(1) of Directive 2003/99/EC.

**Relevant agent species to be reported**

*Campylobacter* spp. differentiation to species level is recommended and should be provided. The major agents of interest are *C. jejuni* and *C. coli*; however, *C. lari* and *C. upsaliensis* may also be reported.

**Case definition/definition of a positive sample**

- *Campylobacter*-positive sample—a sample in which *Campylobacter* spp. has been isolated.

- *Campylobacter* positive batch—a batch in which *Campylobacter* spp. has been isolated from at least one single sample taken out of the batch.

Specific guidelines for reporting data on *Campylobacter* spp. in food are presented in Table 30.

**Table 29:** Requirements for samples tested according Regulation (EU) No 2017/1495

<table>
<thead>
<tr>
<th>Zoonoses</th>
<th>Matrix</th>
<th>Sampling context</th>
<th>Sampler</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Campylobacter</em> spp.</td>
<td>Meat from broilers – carcase chilled ('A021141A')</td>
<td>Surveillance, based on Regulation 2073 (K034A).</td>
<td>Official sampling (CX02A).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Surveillance, based on Regulation 2073 (K034A).</td>
<td>HACCP and own checks (CX04A) or Industry sampling (CX01A).</td>
</tr>
</tbody>
</table>

**Table 30:** Specific guidelines for reporting data on *Campylobacter* spp. in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>• Meat and products thereof—information should be provided on the animal species from which the meat is derived and the nature of the meat, e.g. carcase, fresh meat, minced meat, meat products, meat preparations. The reporting of data on broiler meat, turkey meat, bovine meat and pig meat is recommended. More detailed information on the status of the meat at the point of sampling (e.g. frozen, cooked) and how it is intended to be consumed (e.g. intended to be eaten raw, intended to be eaten cooked) should be provided where available. • Milk and dairy products—information should be provided on the nature of the food, i.e. milk, cheese or other dairy products. For milk and cheese, it is useful to report the animal species from which the food is derived, e.g. cow, sheep, goat. More detailed information on milk (e.g. pasteurised or raw/low heat-treated milk), on cheese (e.g. hard or soft and semi-soft cheese) and on other dairy products (e.g. made from pasteurised or raw/low heat-treated milk) should be provided where available. • Fish and fishery products, live bivalve molluscs, frogs’ legs and snails—information should be provided on the nature of the food, e.g. crustaceans, molluscan shellfish, live bivalve molluscs, other fish, and frogs’ legs. More detailed information on the specific type of food (e.g.</td>
</tr>
</tbody>
</table>
Elements | Description
--- | ---
shrimps, lobsters, oysters) and the status of the food at the point of sampling (e.g. raw, cooked, smoked, and frozen) should be provided where available.
- **Other foods**, e.g. fresh fruit and vegetables—information should be provided on the status of the food at the point of sampling (e.g. pre-cut/non-pre-cut).

**Analytical methods**
For detection and enumeration of *Campylobacter* the methods ISO 10272-1:2006/2017 (ISO, 2006a, 2017g), ISO/TS 10272-2:2006/2017 (ISO, 2006b, 2017h) and ISO/TS 10272-3:2010 (ISO, 2010) are used. Speciation of *Campylobacter* by the use of recognised DNA-based methods, i.e. validated and published PCR methods, is recommended. The method used shall be indicated. PCR is the preferred method for *Campylobacter* speciation, as phenotypical methods (e.g. detection of hippurate hydrolysis) do not fully differentiate between the species.

### 3.3.4. *Listeria monocytogenes* in food

**For the purpose of following trends** the information to be reported is: *L. monocytogenes* in ready-to-eat foods (fishery products, meat products and cheeses). It is recommended that this information is provided at the retail level and processing level.

**Relevant agent species to be reported**
Information on *L. monocytogenes* should be provided.

Absence/presence of *L. monocytogenes* (**detection method**) as well as **quantitative** results (≤ 100 or > 100 colony-forming units (cfu)/g) obtained from the **enumeration method** of *L. monocytogenes* should be reported, where available. It is strongly recommended to provide enumeration information for those food categories for which the criterion ≤ 100 cfu/g has been set.

**Case definition/definition of a positive sample**

- **Positive sample**—a sample is positive for *L. monocytogenes* where *L. monocytogenes* has been isolated from that sample. When using qualitative analysis, it is recommended that the weight of the sample tested be indicated. When using quantitative analysis, it is recommended that the limit of detection of the method used be indicated.

- **Positive batch**—a batch is positive for *L. monocytogenes* where *L. monocytogenes* has been isolated from at least one of the samples in the batch. When using qualitative analysis, it is recommended that the weight of the sample tested be indicated. When using quantitative analysis, it is recommended that the limit of detection of the method used be indicated in the text forms.

Specific guidelines for reporting data on *L. monocytogenes* in food are presented in Table 31.

**Table 31:** Specific guidelines for reporting data on *L. monocytogenes* in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Of particular interest are the food categories for which harmonised food safety criteria are set in Regulation (EC) No 2073/2005.</td>
</tr>
<tr>
<td><strong>Minced meat and meat preparations intended to be eaten raw</strong>—information should be provided on the animal species from which the meat is derived, e.g. bovine animals, pigs, and on the nature of the meat, e.g. minced meat, meat preparation.</td>
<td></td>
</tr>
<tr>
<td><strong>Ready-to-eat meat products</strong>—and meat preparations—detailed information (e.g. frozen, pâté) should be provided where relevant and available.</td>
<td></td>
</tr>
<tr>
<td><strong>Milk and dairy products</strong>—information should be provided on the nature of the food, i.e. milk, cheese or other dairy product. For milk and cheese, it is useful to report the animal species from which the product is derived, e.g. cow, sheep, goat. More detailed information on milk (e.g. pasteurised or raw/low heat-treated milk), on cheese (e.g. hard or soft and semi-soft cheese) and on other dairy products (e.g. made from pasteurised or raw/low heat-treated milk) should be provided where available.</td>
<td></td>
</tr>
<tr>
<td><strong>Ready-to-eat fishery products</strong>—information on the nature of the product, e.g. crustaceans, molluscan shellfish, other fish. More detailed information (e.g. crab, hot and cold smoked, and dry-cured fish) should be provided where relevant and available.</td>
<td></td>
</tr>
</tbody>
</table>
- **Other ready-to-eat foods**—e.g. fruit and vegetables, infant formulae, formulae for special medicinal purposes and follow-on formulae. More detailed information on fruit and vegetables (e.g. pre-cut, non-pre-cut) should be provided where available.

### Analytical methods


To be reported in the Prevalence Data Model: Results from different methods for the same samples can only be reported for *L. monocytogenes* in food where the code F145A (corresponding to the term Detection method—presence in x g) is used to indicate the results from detection method (qualitative) analyses. The code F141A (corresponding to the term Enumeration) is used to indicate the results from enumeration method (quantitative) analyses.

### Quantity

The quantity measured by the test. This data element is mandatory when reporting on enumeration method results of *Listeria monocytogenes* in food (in colony-forming units (cfu)/g). For the data reported on *L. monocytogenes* in food, the code R073A (corresponding to the term <=100) is used to report results where *Listeria monocytogenes* was found in numbers over the quantification limit but less than or equal to 100 cfu/g. On the other hand, the code R077A (corresponding to the term > 100) is used to report results where *L. monocytogenes* was found in numbers greater than 100 cfu/g. In the event that *L. monocytogenes* enumeration analysis is carried out only for the samples that have already been found positive by the *L. monocytogenes* detection method, this should be explained in the comment data element.

### Total units tested

The total number of units (belonging to the same investigation) tested for *L. monocytogenes* using qualitative and/or quantitative methods, for which results are reported. A sample tested using both qualitative and quantitative analysis should be reported as one unit tested.

### Total units positive

The total number of units positive for *L. monocytogenes* based on the results of qualitative and/or quantitative analysis. Where both qualitative and quantitative analyses are used, a unit is considered to be positive if it was shown to be positive in either a qualitative and/or a quantitative test (either positive < 100 cfu/g or positive ≥ 100 cfu/g). In such cases it should be reported as a positive unit only once. It is important to note that, when reporting the total positive units detected using qualitative methods, both units positive < 100 cfu/g and ≥ 100 cfu/g are to be considered. It is important that the definition of a positive sample is provided in the narrative section of the report. In case that no positive units were detected, a ‘0’ (zero) should be reported.

### Units tested

Numbers of units tested for *L. monocytogenes* by the detection method or by the enumeration method. This data element is mandatory when reporting data on *L. monocytogenes* in food.

### Units positive

The number of units positive for *L. monocytogenes*. This data element must be used to report the number of units found to be positive for *L. monocytogenes* by the detection method and found to be < 100 or > 100 cfu/g by the enumeration method. Information on this data element must be reported also when no positive units were detected, meaning that also the negative results ‘0’ should be reported when appropriate.

### 3.3.5. *Yersinia* spp. in food

**Relevant agent species/serotypes/biotypes to be reported**

*Yersinia* spp.

Differentiation at species level should be provided (e.g. *Y. enterocolitica*, *Y. pseudotuberculosis*). In addition, main pathogenic serotypes of *Y. enterocolitica* (O:3, O:9, O:5,27) and/or biotypes (1B, 2, 3, 4, 5) should be reported, when the information is available. If information on both serotype and biotype is available, the results should be reported as the biotype/serotype combinations, as recommended in the report ‘Technical specifications for harmonised national surveys of *Y. enterocolitica* in slaughter pigs’ (EFSA, 2009b), for example biotype 4/O:3.

It is recommended that the presence of human pathogenic *Y. enterocolitica* biotypes/serotypes (e.g. biotype 4/O:3, biotype 2/O:9, biotype 3/O:3, biotype 1B/O:7) be reported.

**Case definition/definition of a positive sample**

- **Yersinia positive sample**—a sample in which *Yersinia* spp. has been isolated.
- **Yersinia positive batch**—a batch in which *Yersinia* spp. has been isolated from at least one single sample taken out of the batch.
Specific guidelines for reporting data on *Yersinia* spp. in food are presented in Table 32.

**Table 32:** Specific guidelines for reporting data on *Yersinia* spp. in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Matrix**                | • Meat and products thereof—information should be provided on the animal species from which the meat is derived, e.g. bovine animals, **pigs**, and the nature of the meat, e.g. carcase, fresh meat, minced meat, meat products, meat preparations. More detailed information on the status of the meat at the point of sampling (e.g. frozen, cooked) and how it is intended to be consumed (e.g. intended to be eaten raw, intended to be eaten cooked) should be provided where available.  
• Milk— for milk, it is useful to report the animal species from which the product is derived, e.g. cow, sheep, goat. More detailed information on milk (e.g. pasteurised or raw/low heat-treated milk) should be provided where available.  
• Fruit and vegetables—information on the nature of the product (e.g. fruit, **vegetables**, sprouted seeds, salad) and the status of the product at the point of sampling (e.g. pre-cut/non-pre-cut fruits and vegetables, ready-to-eat/non-ready-to-eat sprouted seeds) is to be provided. |

**3.3.6. Verotoxigenic *Escherichia coli* in food**

**Relevant agent species/serotypes to be reported**

Strains of *E. coli* which are capable of producing VT/Stx (VTEC or STEC). Information on the serogroup (O antigen) is to be reported. Serogroups of particular interest are: O157, O111, O103, O26 and O145. MSs are strongly encouraged to report information on the STEC/VTEC serogroup, when available.

It is recommended that information on genes encoding verocytotoxin 1 (*vtx1*), verocytotoxin 2 (*vtx2*) or intimin (*eae*) be reported, where available, as stated in the report ‘Technical specifications for the monitoring and reporting of verotoxigenic *Escherichia coli* (VTEC) on animals and food’ (EFSA, 2009a); for example VTEC O157 *eae* positive *vtx1* positive.

Reporting countries are strongly encouraged to submit information on the presence of virulence genes in the VTEC strains using the facets approach.

For serogroup O104, it is recommended that the virulence characters are reported, including presence of verocytotoxin VT2 (*vtx2*+) and enteroaggregative virulence plasmid (*EAgg*+).

The serogroups non-O157 should be differentiated based on the presence/absence of the gene for intimin (*eae*), which is considered a marker of potentially high virulence.

Related to the new criterion laid down in Regulation (EU) No 209/2013, the following information from the retail-level can be reported: VTEC (STEC) O157, O26, O111, O103, O145 and O104: H4—in sprouts (excluding sprouts that have received a treatment effective to eliminate *Salmonella* spp. and STEC).

**Data related to sprouted seeds that will be summarised at EU- and MS-level for trend watching over time are the proportion (%) of positive single samples, taken by the Competent Authorities (Sampler = ‘Official sampling’).**

The reporting of information on the virulence genes of the isolates additional to those encoding the Stx/VT is strongly encouraged as it will enable the evaluation of the STEC strains circulating in food in the EU with respect to their virulence potential. As a matter of fact, the STEC isolates possessing additional virulence genes, such as *eae* and *aggR* are considered at major risk of causing severe disease in humans as the haemorrhagic colitis and the haemolytic uremic syndrome. Additionally, such an evaluation would be supported by the identification of the toxin genes subtypes (e.g. *vtx2a*, *vtx2g* etc...), being some subtypes more associated with severe STEC infections.
Case definition/definition of a positive sample

- **VTEC-positive sample/batch**—a sample/batch from which any VTEC has been isolated using a method specified below.

- **VTEC O157 or other serogroup positive sample/batch**—a sample/batch from which VTEC O157 or other serogroup has been isolated using a method specified below.

MSs are strongly encouraged to only report data on STEC/VTEC as indicated in the Directive 2003/99/EC.

It is important to note that the positive result to be reported, according to the EFSA Data dictionaries’ guideline, is an *E. coli* strain producing VT or possessing the *vtx* genes. The correct reporting of the positive results is strongly recommended.

To make the data reporting easier and harmonized across the MSs, the following options are available to report information on the zoonotic agent:

- **VTEC, serogroup identified**: to be used when a strain carrying the *vtx* genes or producing VT is isolated, and information on the VTEC serogroup is available. The VTEC serogroup identified to be selected from the whole list of VTEC serogroups (From O1 to O...).

- **VTEC non-O157**: to be used only when a strain carrying the *vtx* genes is isolated, but its serogroup belongs neither to O157 nor to any of the other serogroups the laboratory is able to detect.

- **VTEC non-(O157, O26, O103, O111, O145)**: to be used only when a strain carrying the *vtx* genes is isolated, but its serogroup belongs neither to O157, O26, O103, O111, O145 (the serogroups identified by the ISO/TS13136:2012) nor to any of the other serogroups the laboratory is able to detect.

- **VTEC, unspecified**: to be used only when a strain carrying the *vtx* genes or producing VT is isolated, but no information on the VTEC serogroup is available.

Algorithm for reporting VTEC serogroup detection

1. Isolation of an *E. coli* strain producing VT or carrying the *vtx1* or *vtx2* or both genes.
2. Was an attempt to identify the serogroup of the VTEC strain performed?
   - Yes → go to point 3
   - No → report as **VTEC, unspecified**
3. Did the isolated VTEC strain belong to O157?
   - Yes → to be reported as **VTEC, O157**
   - No → go to point 4 (important note: whenever a method aiming at detecting only VTEC O157 has been used, the corresponding negative result should refer only to VTEC O157)
4. Was the identification of the VTEC serogroup obtained?
   - Yes → to be reported as **VTEC, serogroup identified** (detailing the information on the specific serogroup)
   - No → to be reported as:
     - **VTEC, non-O157** or
     - **VTEC, non-(O157, O26, O103, O111, O145)** if the typing attempt included not only O157 but also the serogroups O26, O103, O111, O145

Please consider the following REMARK:

- The VTEC, NT (Non Typeable) value is not accepted. This information strongly depends on the panel of serotyping reagents available in the laboratories. As a result, the information provided by the MSs with this value is not homogeneous and cannot be analysed, because its merging would be meaningless.

Specific guidelines for reporting data on Verotoxigenic *Escherichia coli* are presented in Table 33.

**Table 33**: Specific guidelines for reporting data on Verotoxigenic *Escherichia coli* in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>• <strong>Meat and products thereof</strong>—information should be provided on the animal species from which the meat is derived, e.g. broiler, <strong>bovine animals</strong>, <strong>sheep</strong>, <strong>goat</strong>, <strong>game</strong>, and the nature of the</td>
</tr>
<tr>
<td>Elements</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>Meat, e.g. carcase, fresh meat, minced meat, ready-to-eat fermented meat products, meat preparations. More detailed information on the status of the meat at the point of sampling (e.g. frozen, cooked) and how it is intended to be consumed (e.g. intended to be eaten raw, intended to be eaten cooked) should be provided where available.</td>
<td></td>
</tr>
<tr>
<td>Milk and dairy products—unpasteurised milk and products thereof—information should be provided on the nature of the food, i.e. milk, cheese or other dairy product. For milk and cheese, it is useful to report the animal species from which the product is derived, e.g. cow, sheep, goat. More detailed information on milk (e.g. pasteurised or raw/low heat-treated milk), on cheese (e.g. hard or soft and semi-soft cheese) and on other dairy products (e.g. made from pasteurised or raw/low heat-treated milk) should be provided, where available.</td>
<td></td>
</tr>
<tr>
<td>Fruit and vegetables—information should be provided on the nature of the product (e.g. fruit, vegetables, sprouted seeds, salad) and the status of the product at the point of sampling (e.g. pre-cut/non-pre-cut fruit and vegetables, ready-to-eat/non-ready-to-eat sprouted seeds).</td>
<td></td>
</tr>
<tr>
<td>Juices—information should be provided on the nature of the product (e.g. fruit or vegetable juice, pasteurised/unpasteurised).</td>
<td></td>
</tr>
</tbody>
</table>

### Analytical methods

The type of diagnostic method used is mandatory to be reported in the analytical method data element, in order to facilitate the correct interpretation of the results.

Two main categories of analytical methods are typically used:

- a) Methods aiming at detecting any VTEC, regardless of the serotype. These methods are usually based on PCR screening of sample enrichment cultures and isolation of colonies harbouring vtx genes, followed by the characterisation of the isolated VTEC strains. This category includes the method ISO/TS 13136:2012 (ISO, 2012), other PCR-based methods, and also methods based on the detection of verocytotoxin production by immunoassays.

- b) Methods designed to detect only VTEC O157, such as the method ISO 16654:2001 (ISO, 2001) and the equivalent NMKL 164:2005 (NMKL, 2005). VTEC O157 is the serotype most commonly reported in the EU as a cause of both outbreaks and sporadic cases in humans and has also been identified as the major cause of HUS in children. The focus has therefore traditionally been on this serotype in many of the MS surveillance programmes.

The recommended method for the detection of VTEC O104:H4 is the method 'EU-RL_Method_food_2. Rev.2-O104:H4'.

- ISO 16654:2001 or NMKL 164:2005 or DIN 10167 (code 'F593A') or any alternative method validated against these methods, according to the ISO 16140. These methods are specific for VTEC O157.

- ISO/TS 13136:2012 (including the EU-RL adaptation for O104:H4) (code 'F173A') or any alternative method validated against this method, according to the ISO 16140. These methods aim at detecting any VTEC, regardless of the serotype.

- In house real time PCR methods based on ISO/TS 13136:2012 (code 'F594A'). These methods aim at detecting any VTEC, regardless of the serotype.

- Real-time PCR (BAX) followed by Whole Genome Sequencing of the isolate (code 'F692A'). These methods aim at detecting any VTEC, regardless of the serotype.

- Other methods based on PCR detection of vtx genes (code 'F595A'). These methods aim at detecting any VTEC, regardless of the serotype.

- DIN 10118:2004 (code 'F596A') or any alternative method validated against this method, according to the ISO 16140. These methods aim at detecting any VTEC, regardless of the serotype.

- Unspecified (code 'F598A'). In this case, basic details on the method – when available - should be specified in the 'comment' data element.

### 3.3.7. Brucella spp. in food

**Relevant agent species to be reported**

*Brucella* spp. differentiation at species level should be provided, where available, e.g. *B. abortus*, *B. melitensis* and the biovar.

**Case definition/definition of a positive sample**

- *Brucella*-positive sample—a sample from which *Brucella* spp. has been isolated.

---

• **Brucella-positive batch**—a batch from which *Brucella* spp. has been isolated from at least one single sample taken out of the batch.

Specific guidelines for reporting data on *Brucella* spp. in food are presented in Table 34.

**Table 34:** Specific guidelines for reporting data on *Brucella* spp. in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Milk and dairy products—information on the nature of the food, e.g. milk, cheese or other dairy products. For milk and cheese, it is useful to report the animal species from which the product is derived, e.g. cow's, sheep's, goat's or mixed milk. More detailed information on milk (e.g. pasteurised or raw/low heat-treated milk), on cheese (e.g. hard or soft and semi-soft cheese) and on other dairy products (e.g. made from pasteurised or raw/low heat-treated milk) should be provided where available.</td>
</tr>
<tr>
<td><strong>Analytical methods</strong></td>
<td>There is no standard method for food examination. Details of the detection method used should be provided.</td>
</tr>
</tbody>
</table>

3.3.8. **Staphylococcal enterotoxins in food**

**Case definition/definition of a positive sample**

- **Positive sample**—a sample in which staphylococcal enterotoxins have been detected. It is recommended that the weight of the sample tested be indicated.
- **Positive batch**—a batch in which staphylococcal enterotoxins have been detected in at least one of the five sample units that in the batch.

Specific guidelines for reporting data on Staphylococcal enterotoxins are presented in Table 35.

**Table 35:** Specific guidelines for reporting data on Staphylococcal enterotoxins in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Matrix**    | Food categories for which staphylococcal enterotoxins food safety criterion is laid down in Regulation (EC) No 2073/2005:  
  - cheeses made from raw milk or milk that has undergone treatment with heat at a temperature lower than that of pasteurisation;  
  - ripened cheeses made from milk or whey that have undergone pasteurisation or treatment at a higher temperature;  
  - unripened soft cheeses (fresh cheeses) made from milk or whey that have undergone pasteurisation or treatment at a higher temperature;  
  - milk powder and whey powder not intended for further processing in the food industry. |

3.3.9. **Cronobacter** spp. in food

**Relevant agent species to be reported**

*Cronobacter* spp. differentiation to species level is recommended, e.g. *Cronobacter sakazakii* (*C. sakazakii*).

**Case definition/definition of a positive sample**

- **Cronobacter spp.-positive sample**—a sample in which *Cronobacter* spp. has been isolated.
- **Cronobacter spp.-positive batch**—a batch in which *Cronobacter* spp. has been isolated from at least one single sample taken out of the batch.

Specific guidelines for reporting data on *Cronobacter* spp. in food are presented in Table 36.
### Table 36: Specific guidelines for reporting data on *Cronobacter* spp. in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Food categories for which a <em>Cronobacter</em> spp. food safety criterion is laid down in Regulation (EC) No 2073/2005:</td>
</tr>
<tr>
<td></td>
<td>- <strong>Dried infant formulae</strong>—where available, information should be provided on the animal species from which the product is derived, e.g. cow, sheep, goat.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Dried dietary foods for special medical purposes intended for infants below 6 months of age</strong>—where available, information should be provided on the nature of the food, e.g. milk, fruit and cereals. For milk-derived products, it is useful to report the animal species from which the product is derived, e.g. cow, sheep, goat.</td>
</tr>
</tbody>
</table>

#### 3.3.10. Histamine in food

**Relevant agent species to be reported**

Histamine, categorised according to the quantity of the histamine detected in the sampling unit.

**Case definition/definition of a positive sample**

The microbiological criteria set for the fishery products prescribes that a batch sample consist of nine single units, out of which two single units are allowed to have values between the given two limits ($m$ and $M$), however EFSA will analyse only single samples. The positive results are considered when the quantity found in the sample is above $m$.

- Positive sample is—a single sample that contains histamine at a concentration with more than 100 mg/kg (category 1), more than 200 mg/kg (category 2) or more than 400 mg/kg (category 3).

Specific guidelines for reporting data on histamine spp. in food are presented in Table 37.

Datasets that will be summarised at EU- and MS-level for trend watching over time are those from fish sauce produced by fermentation of fishery products, from fishery products from fish species associated with high amount of histidine, and from fishery products that have undergone enzyme maturation from fish species with a high amount of histidine. The results considered are those from single samples taken by the Competent Authorities (Sampler = 'Official sampling').

### Table 37: Specific guidelines for reporting data on histamine in food

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Food categories for which a histamine food safety criterion is laid down in Regulation (EC) No 2073/2005:</td>
</tr>
<tr>
<td></td>
<td>- <strong>Fishery products from fish species associated with large amounts of histidine</strong> (e.g. fish species of the families <em>Scombridae</em>, <em>Clupeidae</em>, <em>Engraulidae</em>, <em>Coryenidae</em>, <em>Pomatomidae</em> and <em>Scombresosidae</em>), which are <strong>not enzyme matured in brine</strong> (category 1). This typically includes raw fish flesh and canned products from these fish species. It is recommended that a detailed description of the product examined is given (raw product, canned).</td>
</tr>
<tr>
<td></td>
<td>- <strong>Fishery products from fish species associated with large amounts of histidine</strong> (e.g. fish species of the families <em>Scombridae</em>, <em>Clupeidae</em>, <em>Engraulidae</em>, <em>Coryenidae</em>, <em>Pomatomidae</em> and <em>Scombresosidae</em>), which <strong>have undergone enzyme maturation treatment in brine</strong> (category 2). It is recommended that a detailed description of the product examined is given (canned).</td>
</tr>
<tr>
<td></td>
<td>- <strong>Fish sauce produced by fermentation of fishery products</strong> (Category 3)</td>
</tr>
<tr>
<td><strong>Quantity</strong></td>
<td>The quantity measured by the test in the following ranges:</td>
</tr>
<tr>
<td></td>
<td>To be used for Category 1:</td>
</tr>
<tr>
<td></td>
<td>- less than or equal to 100 mg/kg (‘&lt;=100’ code ‘R073A’);</td>
</tr>
<tr>
<td></td>
<td>- more than 100 mg/kg but below or equal to 200 mg/kg (‘&gt; 100 to &lt;=200’ code ‘R075A’);</td>
</tr>
</tbody>
</table>
### 4. Reporting disease status results (in the disease status data model)

The mandatory annual reporting for bovine tuberculosis and for bovine and ovine and caprine brucellosis is based on Directive 2003/99 that cites in Recital 7 the Council Directives 64/432/EEC and 91/68/EEC. The relevant Commission Decisions relating to the officially free (OF) MS and MS’ regions and related reporting are: Decision 2003/467/EC for bovine tuberculosis and bovine brucellosis, and Decision 93/52/EC for sheep and goat brucellosis (*B. melitensis*).

Information on the EU approved and co-financed national veterinary programmes carried out by the MS can be found on the dedicated EC webpage (European Commission, online).

#### 4.1. General reporting guidelines

The **disease status data model** should be used for the disease status reporting on tuberculosis (*Mycobacterium bovis* and *M. caprae*) in bovine animals and brucellosis in bovine animals, in sheep and in goats. Four types of table titles (names) exist:

- tables for data on herds with EU co-financed programmes (general guidelines are presented in Table 39);
- tables for data on animals with EU co-financed programmes (general guidelines are presented in Table 40);
- tables for data on the status of herds with EU co-financed programmes at the end of the reporting period (general guidelines are presented in Table 41);
- tables for countries or regions that do not receive EU co-financing for their monitoring or eradication programmes.

**MS with EU co-financed programmes**

The following MS or MS’ regions with approved co-financed programmes for 2019 should report the data in the disease status tables provided for EU co-financed eradication programmes;

- as regards bovine tuberculosis: Ireland, Italy, Portugal, Spain and United Kingdom
- as regards bovine brucellosis: Italy, Portugal and Spain
- as regards sheep and goat brucellosis (*B. melitensis*): Croatia, Greece,

These MS may additionally use the tables ‘Countries and regions that do not receive EU co-financing for eradication programmes’ to report data originating from their OF regions.

**MS without EU co-financed programmes or OF MS**

They use the tables ‘Countries and regions that do not receive EU co-financing for eradication programmes’.

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27 During 2019, only Greece purchased vaccines covered by EU co-financing for its ovine and caprine brucellosis programme.
Note that the control of these tuberculosis and brucellosis is harmonised in EU legislation. If definitions and concepts other than those given in that legislation are used, they should be explained in the comments/footnotes or in the text forms.

General guidelines for reporting the disease status data are summarised in Table 38.

**Table 38:** General guidelines for reporting the disease status data

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name</td>
<td>The official EU reporting tables to which the data refer.</td>
</tr>
<tr>
<td>Regions</td>
<td>The regions of the MS for which data is reported should be indicated. If no regional information exists, the results from the entire MS should be reported by using the whole country code. Reporting the total for the whole country is mandatory. To report the total for the country, the NUTS code corresponding to the whole country should be reported in this data element. In a MS that has an approved eradication programme, the term 'Region' should be understood and aligned as defined in the programme.</td>
</tr>
<tr>
<td>Disease status unit</td>
<td>The data elements of the official EU reporting tables whose numeric value (e.g. population) is reported in the data element Number of units.</td>
</tr>
</tbody>
</table>

**Table 39:** Guidelines for reporting disease status data on herds with EU co-financed eradication programmes

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name</td>
<td>E.g. 'Bovine tuberculosis - data on herds - Community co-financed eradication programmes' (code ZT10A)</td>
</tr>
<tr>
<td>Disease status unit</td>
<td>From ZOO_CAT_UNITDS catalogue the following terms can be chosen:</td>
</tr>
<tr>
<td></td>
<td>- Total number of herds—the total number of existing herds in the region, including both herds eligible and non-eligible for the programme. Eligible herds are those for which it is compulsory to apply the programme. Non-eligible herds are those that can be excluded from the application of the programme.</td>
</tr>
<tr>
<td></td>
<td>- Number of herds under the program—herds under official control (by region in non-officially free MSs) should be reported. Therefore, this figure is usually the total number of bovine herds. In non-officially free MSs or regions, the number of herds that are included in the control programmes should be reported here. If all the herds in these non-officially free MSs or regions are routinely tested, this number will be the total number of herds. In any other case, the number of herds under the programme should be clearly mentioned and can be equal to the number of herds tested under surveillance.</td>
</tr>
<tr>
<td></td>
<td>- Number of herds under the program tested/checked—herds on which tests have been performed. Herds should not be counted twice even if they have been checked more than once. The number of herds tested under surveillance can be the same for as the number of herds under the programme.</td>
</tr>
<tr>
<td></td>
<td>- Number of positive herds—herds with at least one positive animal during the period, independently of the number of times the herd has been checked.</td>
</tr>
<tr>
<td></td>
<td>- Number of new positive herds—herds whose status in the previous period was unknown, non-free negative, free, officially free or suspended and have at least newly detected one positive animal in this period.</td>
</tr>
<tr>
<td></td>
<td>- Number of depopulated herds—positive herds for which a stamping-out policy has been applied. This stamping out can be partial or complete stamping-out policy.</td>
</tr>
<tr>
<td></td>
<td>- Number of units—the value (e.g. population) of the unit reported in the data element Disease status unit.</td>
</tr>
</tbody>
</table>

**Table 40:** Guidelines for reporting disease status data on animals with EU co-financed eradication programmes

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name</td>
<td>E.g. 'Ovine or caprine brucellosis - data on animals - Community co-financed eradication programmes' (code ZT05A).</td>
</tr>
</tbody>
</table>
Elements | Description
--- | ---
**Disease status unit** | From ZOO_CAT_UNITDS catalogue the following terms can be chosen:
- **Total number of animals**—number of animals existing in the region, including those from herds both eligible and non-eligible for the programme.
- **Number of animals tested under the programme**—total number of animals under official control, including animals tested individually or under a bulk scheme level.

In **officially free MSs or regions**, usually all animals are under the clinical supervision of a veterinarian and all suspicious cases have to be reported. Furthermore, upon slaughter, all animals have to be individually inspected *ante mortem* and *post mortem*. Therefore, this figure is usually the total number of animals. In **non-officially free MSs or regions**, the number of animals that are included in the control programmes should be reported here. If all animals are routinely tested, this figure will be the total number of animals. Otherwise, the number of animals tested should be clearly stated.

- **Number of animals tested**—number of animals tested, including animals to be tested individually or under a bulk scheme level.
- **Number of animals tested individually**—number of animals individually tested, excluding animals tested under a bulk scheme level (e.g. tests on a bulk milk tank).
- **Number of positive animals**—total number of animals tested with a positive result.
- **Number of positive animals slaughtered**—total number of animals with a positive result, slaughtered, dead or killed (culled).
- **Total number of animals slaughtered**—total number of animals that were slaughtered, including all positive, suspected and inconclusive and also the negative animals slaughtered under the programme.

<table>
<thead>
<tr>
<th>Table 41:</th>
<th><strong>Guidelines for reporting disease status data on the status of herds at the end of the period with EU co-financed eradication programmes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Elements</td>
<td>Description</td>
</tr>
<tr>
<td><strong>Table name</strong></td>
<td>E.g. ‘Bovine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes’ (code ZT03A).</td>
</tr>
</tbody>
</table>
| **Disease status unit** | From ZOO_CAT_UNITDS catalogue the following terms can be chosen:
- **Total number of herds/animals under the programme**—total number of herds/animals covered by the EU co-financed programme. When reporting the totals for animals, all animals under the programme from herds with the referred status should be included.
- **Number of herds/animals with unknown status, at the end of the period**—total number of herds/animals covered by the programme for which no previous information on status and/or testing results was available. When reporting the totals for animals, all animals under the programme from herds with the referred status should be included. |

4.2. **Tuberculosis in bovine animals and in farmed deer**

According to Directive 2003/99/EC the zoonosis and zoonotic agent to be included in monitoring of bovine tuberculosis is tuberculosis due to *M. bovis* (Annex I, list A). Additionally to *M. bovis*, *M. caprae* is recognised since 2003 as a distinct bacterial species and causative agent of bovine tuberculosis and of tuberculosis in humans and animals other than cattle (Aranaz et al, 2003). Disease caused by *M. caprae* is not considered to be substantially different from that caused by *M. bovis*, and the same tests can be used for its diagnosis (OIE Terrestrial Manual). In the meeting of 7 May 2013 of the Committee on the Food Chain and Animal Health (Section Animal Health & Welfare)\(^{28}\), the EC circulated and presented a working document (SANCO/7059/2013) on the subject matter. Without prejudice to the exclusive competence of the European Court of Justice to authoritatively interpret Union legislation, the document concluded that all provisions explicitly referring to *M. bovis* in Directive 64/432/EEC should be understood as also applicable to *M. caprae*. Based on the above, a distinction is descriptively made for the first time in the EU annual summary reports on trends and sources of zoonoses, of reporting by MS on *Mycobacterium tuberculosis* complex, *M. bovis* and *M. caprae*.

Relevant animal species to be reported
Bovine animals (cattle), including the species *Bison bison* and *Bubalus bubalis*, and farmed deer.

Relevant agent species to be reported
Data related to bovine tuberculosis due to *M. bovis*, *Mycobacterium tuberculosis* complex and *M. caprae* in cattle and data related to tuberculosis in farmed deer should be reported.

For reporting of data on farmed deer, the same definitions and instructions used for bovine tuberculosis apply; the relevant data should be reported in the table 'Tuberculosis in farmed deer', which is similar to the table used for non-OTF MSs with eradication programmes that do not receive EU co-financing.

Specific guidelines and definitions for reporting data using specific Disease status units on bovine tuberculosis are presented in Tables 42 and 43.
Table 42: Bovine tuberculosis - data on status of herds at the end of the period - Community co-financed eradication programmes (‘ZT11A’)

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds with status not free or not officially free and last check positive, at the end of the period (DU16A)</td>
<td>Herds checked with at least one positive result in the latest check.</td>
</tr>
<tr>
<td>Number of herds with status not free or not officially free and last check negative, at the end of the period (DU18A)</td>
<td>Herds checked with negative results in latest check, but not being OTF.</td>
</tr>
<tr>
<td>Number of herds with status free or officially free suspended, at the end of the period (DU20A)</td>
<td>Bovine herds that fall under the conditions laid down in paragraph I.3.A of Annex A of Council Directive 64/432/EEC and that have been declared as such by the competent authority. These herds do not fulfil the conditions to retain OTF status (paragraph I.2, Annex A of Council Directive 64/432/EEC), or one or more animals are deemed to have given a positive reaction to a tuberculin test, or a case of tuberculosis is suspected at post-mortem examination.</td>
</tr>
<tr>
<td>Number of herds with status officially free, at the end of the period (DU24A)</td>
<td>Bovine herds that satisfy the conditions laid down in paragraphs I.1 and I.2 of Annex A of Council Directive 64/432/EEC and that have been declared as such by the competent authority.</td>
</tr>
</tbody>
</table>

Table 43: Bovine tuberculosis in countries and regions that do not receive Community co-financing for eradication programme (‘ZT12A’)

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds with status officially free (DU54A)</td>
<td>All herds under control which are non-OTF during the reporting period/year. This figure summarises the results of different activities (tuberculin testing, meat inspection, follow-up investigations, tracing).</td>
</tr>
<tr>
<td>Interval between routine tuberculin tests (DU26A)</td>
<td>The number of months between routine tuberculin tests should be reported, while any additional information concerning the interval should be reported in the Comment data element (resComm DST.10).</td>
</tr>
<tr>
<td>Number of animals tested with tuberculin routine testing (DU27A)</td>
<td>Total number of animals tested by official tuberculin testing (Annex B of Council Directive 64/432/EEC) during the reporting year, within the investigation schedule. In case that tuberculin testing is not performed yearly, only those animals tested during the reporting period should be recorded.</td>
</tr>
<tr>
<td>Number of tuberculin tests carried out before the introduction into the herds (DU28A)</td>
<td>Detailed regional information is required, unless the official status has been granted to the whole territory of the MS.</td>
</tr>
<tr>
<td>Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological examinations (DU29A)</td>
<td>The number of bovine animals slaughtered showing suspicious lesions of tuberculosis at the post-mortem examination are reported, together with the number of samples in which the presence of M. bovis in clinical and post-mortem specimens has been demonstrated by any of the techniques specified in Annex B, paragraph 1, of Council Directive 64/432/EEC.</td>
</tr>
<tr>
<td>Number of animals detected positive in bacteriological examination (DU30A)</td>
<td>Number of bovine animals in which M. bovis has been confirmed by a bacteriological examination specified in Annex B, paragraph 1, of Council Directive 64/432/EEC.</td>
</tr>
</tbody>
</table>
4.3. Bovine brucellosis

Relevant animal species to be reported
Bovine animals, including the species *Bison bison* and *Bubalus bubalus*.

Relevant agent species to be reported
Current minimal EU legal obligation is to report on *B. abortus* from bovine animals.
Specific guidelines and definitions for reporting data using specific Disease status units on bovine brucellosis are presented in Tables 44 and 45.

4.4. Ovine and caprine brucellosis

Relevant agent species to be reported
Current minimal EU legal obligation is to report on *B. melitensis* from sheep and goats.
Specific guidelines and definitions for reporting data using specific Disease status units on ovine and caprine brucellosis are presented in Tables 46 and 47.

It is of note that, from 21 April 2021 onwards29, an obligation comes into force to report on *B. abortus*, *B. melitensis* and *B. suis* in all bovines, sheep, and goats.

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Table 44: Bovine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes ('ZT03A')

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds with status not free or not officially free and last check positive, at the end of the period (DU16A)</td>
<td>Herds checked with at least one positive result in the last check.</td>
</tr>
<tr>
<td>Number of herds with status not free or not officially free and last check negative, at the end of the period (DU18A)</td>
<td>Herds checked with negative results in latest check but not free or OBF.</td>
</tr>
<tr>
<td>Number of herds with status free or officially free suspended, at the end of the period (DU20A)</td>
<td>Bovine herds that fall under the conditions laid down in Annex AII, paragraphs 3A (Officially free) and 6A (Free), of Council Directive 64/432/EEC and that have been declared as such by the competent authority.</td>
</tr>
<tr>
<td>Number of herds with status free, at the end of the period (DU22A)</td>
<td>Bovine herds that satisfy the conditions laid down in Annex AII, paragraphs 4 and 5, of Council Directive 64/432/EEC and that have been declared as such by the competent authority.</td>
</tr>
<tr>
<td>Number of herds with status officially free, at the end of the period (DU24A)</td>
<td>Bovine herds that satisfy the conditions laid down in Annex AII, paragraphs 1 and 2, of Council Directive 64/432/EEC and that have been declared as such by the competent authority.</td>
</tr>
</tbody>
</table>

Table 45: Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme ('ZT04A')

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds with status officially free (DU54A)</td>
<td>All herds under control which are non-OTF during the reporting period/year. This figure summarises the results of different activities (tuberculin testing, meat inspection, follow-up investigations, tracing).</td>
</tr>
<tr>
<td>Number of infected herds (DU56A)</td>
<td>The total number of bovine herds under control which are non-free or non-OBF during the reporting period/year. This figure summarises the results of different activities (notification of clinical cases, including abortions, routine testing, follow up investigations and tracing).</td>
</tr>
<tr>
<td>Number of herds tested under surveillance (DU31A)</td>
<td>Total number of herds with animals tested individually with serological tests performed, as mentioned in Annex C of Council Directive 64/432/EEC.</td>
</tr>
<tr>
<td>Number of animals tested under surveillance (DU32A)</td>
<td>Number of animals tested under surveillance</td>
</tr>
<tr>
<td>Number of infected herds tested under surveillance (DU33A)</td>
<td>Number of infected herds tested under surveillance</td>
</tr>
<tr>
<td>Number of herds tested under surveillance by bulk milk (DU34A)</td>
<td>Total number of herds in which routine tests have been performed by examination of bulk milk samples, according to Annex C of Council Directive 64/432/EEC.</td>
</tr>
<tr>
<td>Number of animals or pools tested under surveillance by bulk milk (DU35A)</td>
<td>Number of animals or pools tested under surveillance by bulk milk</td>
</tr>
<tr>
<td>Number of infected herds tested under surveillance by bulk milk (DU36A)</td>
<td>Number of infected herds tested under surveillance by bulk milk</td>
</tr>
<tr>
<td>Number of notified abortions whatever cause under investigations of suspect cases (DU37A)</td>
<td>Abortions notified on a mandatory basis to retain the status of OBF by a region or MS (those suspected of being due to brucellosis and investigated by the competent authority.</td>
</tr>
<tr>
<td>Number of abortions due to Brucella infection under investigations of suspect cases (DU39A)</td>
<td>Total number of animals with isolations, species and serotypes of Brucella spp. resulting from abortions, in accordance with the proper identification methods, as documented in Annex C of Council Directive 64/432/EEC.</td>
</tr>
<tr>
<td>Number of isolations of Brucella abortus under investigations of suspect cases (DU38A)</td>
<td>Total number of animals with an abortion from which B. abortus has been isolated.</td>
</tr>
</tbody>
</table>
## Manual for reporting 2018 data on zoonoses

### Disease status unit

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of animals serologically tested under investigations of suspect cases (DU40A)</td>
<td>Total number of animals tested with the serological test mentioned in Section II, paragraph 10, of Annex A of Council Directive 64/432/EEC.</td>
</tr>
<tr>
<td>Number of suspended herds under investigations of suspect cases (DU41A)</td>
<td>Total number of OBF herds of origin or of transit of a suspected bovine animal and herds linked epidemiologically to it.</td>
</tr>
<tr>
<td>Number of seropositive animals under investigations of suspect cases (DU42A)</td>
<td>Total number of animals with a positive result on the serological test mentioned in Section II, paragraph 10, of Annex A of Council Directive 64/432/EEC.</td>
</tr>
<tr>
<td>Number of animals positive to BST under investigations of suspect cases (DU43A)</td>
<td>Total number of animals with positive results on the BST, as specified in paragraph 3 of Annex C of Council Directive 64/432/EEC.</td>
</tr>
<tr>
<td>Number of animals tested by microbiology under investigations of suspect cases (DU44A)</td>
<td>Total number of animals examined for identification of the agent.</td>
</tr>
<tr>
<td>Number of animals positive in microbiological testing under investigations of suspect cases (DU45A)</td>
<td>Total number of animals with a positive result on the test described in paragraph 1 of Annex C of Council Directive 64/432/EEC for identification of the agent.</td>
</tr>
</tbody>
</table>

### Table 46: Ovine or Caprine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes (‘ZT07A’)

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds with status not free or not officially free and last check positive, at the end of the period (DU16A)</td>
<td>Herds checked with at least one positive result in the last check.</td>
</tr>
<tr>
<td>Number of herds with status not free or not officially free and last check negative, at the end of the period (DU18A)</td>
<td>Herds checked with negative results in latest check but not free or OBF.</td>
</tr>
<tr>
<td>Number of herds with status free or officially free suspended, at the end of the period (DU20A)</td>
<td>Ovine or caprine herds that satisfy the conditions laid down in Section I of Chapter I (officially free) or Chapter 2 (free) of Annex A of Council Directive 91/68/EEC.</td>
</tr>
<tr>
<td>Number of herds with status free, at the end of the period (DU22A)</td>
<td>Ovine or caprine herds that satisfy the conditions laid down in Chapter 2 of Annex A of Council Directive 91/68/EEC.</td>
</tr>
<tr>
<td>Number of herds with status officially free, at the end of the period (DU24A)</td>
<td>Ovine or caprine herds that satisfy the conditions laid down in Section I of Chapter I of Annex A of Council Directive 91/68/EEC.</td>
</tr>
</tbody>
</table>

### Table 47: Ovine or Caprine brucellosis in countries and regions that do not receive Community co-financing for eradication programme (‘ZT08A’)

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of infected herds (DU56A)</td>
<td>The total number of ovine or caprine herds under control which are non-free or non-Obf during the reporting period/year. This figure summarises the results of different activities (notification of clinical cases, including abortions, routine testing, follow-up investigations, tracing).</td>
</tr>
<tr>
<td>Number of animals positive in microbiological testing under investigations of suspect cases (DU45A)</td>
<td>Total number of animals in which the presence of <em>Brucella</em> has been confirmed following microbiological examination.</td>
</tr>
<tr>
<td>Number of herds tested under surveillance (DU31A)</td>
<td>Total number of herds on which animals over 6 months were tested in accordance with paragraph II2 of Annex A of Council Directive 91/68/EEC.</td>
</tr>
<tr>
<td>Number of infected herds tested under surveillance (DU33A)</td>
<td>Total number of herds tested with at least one animal with a positive result.</td>
</tr>
</tbody>
</table>
### Disease status unit

<table>
<thead>
<tr>
<th>Disease status unit</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of seropositive animals under investigations of suspect cases (DU42A)</td>
<td>Total number of investigated animals positive to a serological test.</td>
</tr>
<tr>
<td>Number of suspended herds under investigations of suspect cases (DU41A)</td>
<td>Total number of herds for which an epidemiological investigation is being carried out.</td>
</tr>
</tbody>
</table>
5. Reporting animal population data (in the animal population data model)

Specific guidelines for reporting animal population data using the animal population data model are presented in Table 48.

Table 48: Specific guidelines for reporting data on susceptible animal populations in the Animal Population Data Model

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Detailed breakdown information on animal species can be included, such as the type of animals (e.g. wild, farmed, pet) or the production category (e.g. breeding, fattening animals).</td>
</tr>
<tr>
<td>The unit</td>
<td>The measurement for the selected matrix which should be chosen from the UNIT catalogue:</td>
</tr>
<tr>
<td></td>
<td>- herds/flocks—the number of existing herds or flocks of animals;</td>
</tr>
<tr>
<td></td>
<td>- holdings—the number of existing holdings rearing farmed animals;</td>
</tr>
<tr>
<td></td>
<td>- animals—the number of live animals (livestock data at animal level);</td>
</tr>
<tr>
<td></td>
<td>- slaughter animal (heads)—the number of slaughtered animals.</td>
</tr>
<tr>
<td>Population</td>
<td>The number of population for the selected matrix expressed in the unit.</td>
</tr>
<tr>
<td>Source year</td>
<td>The relevant year should be indicated in case that the information derives from previous years.</td>
</tr>
</tbody>
</table>

6. Reporting information in text forms

The text forms are meant to describe in a narrative text the monitoring/surveillance and/or control programmes for each of zoonotic agents for which data are transmitted. The provided narrative text should facilitate the interpretation of the results within the correct context and, where possible, the comparison of the results between reporting years (trends analysis). In addition, the possible sources of zoonotic agents should be evaluated, particularly in relation to detection of zoonotic agents in foodstuffs, animals and feedingstuffs and their relevance to human cases and/or outbreaks.

Information on zoonoses listed in Directive 2003/99/EC can be reported in the text forms. The requirements for the content of the annual national reports on zoonoses are laid down in Annex IV of Directive 2003/99/EC.

It is recommended that the information below is given under each title.

6.1. Institutions and laboratories involved in zoonoses monitoring and reporting

A short description of the institutions and laboratories involved in data collection and reporting should be provided.

6.2. Susceptible animal populations

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

Under this title, the source of the reported numbers and figures can be described: e.g. the national identification and registration database and/or official statistics, institutions involved etc.

The reported numbers should be related to a specific time period. Therefore the dates or time period for which the information is reported should be specified: e.g. the number of animals reported are obtained from a census counting at the end of the year, the number of animals reported is an average taken at a certain time point of the year or over a period of the year, the yearly slaughtered animals per year, etc.

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

Clear definitions for the different types of animals as well as for herds/flocks/holdings and where relevant the type of production involved.
3. National changes of the numbers of susceptible population and trends
A description of the national temporal trends (last 5 years) in the number of herds/flocks/animals and, where possible, according to the production type, should be provided under this title.

4. Geographical distribution and size distribution of the herds, flocks and holdings
A description of the national geographical distributions/trends in the number of herds/flocks/animals and, where possible, according to the production type, should be provided under this title: e.g. if available a link to websites with national density maps (animal level and/or herd/flock level), tables with number of herds and flocks according to geographical area.

5. Additional information
Any other information relevant to the monitoring of the zoonoses in question can be described under this title.

6.3. General evaluation
This text form should be filled in per zoonotic agent

1. History of the disease and/or infection in the country
A general description of history of the disease until the current/recent situation can be give under this title. It can be stated if a disease is (hyper) endemic, eradicated or if sporadic cases occur in human population/animals. Historical epidemics (if any) can be described in general.

2. Evaluation of status, trends and relevance as a source for humans
A description and an epidemiological evaluation (trends and sources) for the last 5 years until the recent/current situation for the different relevant matrices (food, feed, animal) can be described under this title.

A description of the disease status at country/regional level (e.g. brucellosis in cattle and small ruminants, bovine tuberculosis, rabies status according specific criteria of OIE\(^{30}\) or the World Health Organization (WHO)\(^{31}\), etc.) as well as the status of holdings (e.g. whether holdings are officially recognised to apply controlled housing conditions in relation to *Trichinella* in accordance with Point A of chapter I of annex IV to Commission Regulation (EC) No 2075/2005\(^{32}\))

3. Any recent specific action in the Member State or suggested for the European Union
Recent actions taken to control specific zoonoses as well as specific measures undertaken during recent years (last 5 years) to contain zoonoses can be described. These actions and measures could include implementation of new legislation, recommendations issued, new control and monitoring programmes, etc.

Suggestions to the EU for the actions to be taken—this item provides an opportunity to propose measures to be taken by risk managers at the EU level. Typically, this could involve suggestions for new EU legislation.

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\(^{31}\) [http://gamapserver.who.int/mapLibrary/Files/Maps/Global_Rabies_ITHRiskMap.png?ua=1](http://gamapserver.who.int/mapLibrary/Files/Maps/Global_Rabies_ITHRiskMap.png?ua=1)

6.4. Description of Monitoring/Surveillance/Control programmes system

This text form should be filled in per combination of zoonotic agent and matrix

1. Monitoring/Surveillance/Control programmes system

A description of the monitoring/surveillance/control programmes should be given with relation to:

- Sampling scheme (sampling strategies, frequency of the sampling, type of specimen taken). It should be clear by description whether the (epidemiological) sampling unit of interest is either single samples or batches (feed and food) or animals or flocks and which specific specimen is collected (e.g. blood (serum), organs, milk, faeces). In the case of text forms reported for the disease status the sample type is important to be reported as this is not included in the data model. For bovine, ovine and caprine brucellosis the sample type could be; serum for serological test (RBT, CFT), abortion material, vaginal discharges, milk, lymph nodes or other tissue for the identification of the agent. For tuberculosis in bovine animals and in farmed deer the sample type could be: abnormal lymph nodes and parenchymatous organs (e.g. lungs, liver and spleen), which are typically sampled when pathological lesions exist. If no lesions exist, liver and the following lymph nodes are usually collected: retropharyngeal, bronchial, mediastinal, supramammary, mandibular and some mesenteric. In the case of the gamma-interferon test, blood samples are collected. In addition the description should allow to inform on the purpose (sampling strategy) the monitoring/surveillance programme (detection of diseases, monitoring the occurrence, prove freedom of infection, a national survey study or a combination of these) and/or whether there is only passive surveillance (clinical suspects) implemented or if monitoring/surveillance is combined with active surveillance (planned sampling). The target animal population should be clearly described and it should be indicated whether the entire population was covered or only a subset of it. Similarly, the categories of foodstuffs and feedingstuffs sampled should be clearly identified. It can be described if sampling was random or risk based (e.g. by geographical regions or herd size or age or only sensitive food matrix, etc.). In particular for animals it is important to know whether clinical suspected animals are sampled or not (e.g. *Toxoplasma gondii*, rabies, WNV). Sampling can be performed in a certain context on a daily, weekly, monthly or yearly basis and should be described where possible.

- Sampling stage: it should be specified where the sampling has taken place (e.g. farm’, ‘slaughterhouse’, ‘hatchery’, ‘processing plant’ or ‘retail’). Equally important is the stage of sampling, which can be any step in the animal-rearing process or the food chain. For example, the sample may be taken during the animal-rearing period, during production period (laying, fattening) before or after chilling of the carcase in the slaughterhouse, or before or after the expiration of the shelf-life of foodstuffs.

- Sampler: it should be specified who was performing the sampling: e.g. samples taken by the competent authority as part of an ‘official sampling’ or samples taken by industry (food or feed business operators) or by other representatives of private enterprises, in the context of ‘HACCP and own checks’.

- Description of sampling techniques: a description of the sampling techniques, meaning the procedures on how the sample was technically taken should be provided and include specific information on the site of sampling (e.g. part of a carcase, part of the facilities for an environmental sample), size of sample taken (e.g. in g, cm², mL) and, if possible, the number of (sub)samples/sample units taken and whether pooling of samples was applied or not. The storage of samples and the length of this storage before sampling may be described where relevant (e.g. histamine, *Listeria monocytogenes*, etc.). For *Salmonella* control programmes the methods of sampling should be described whether the sampling was in accordance with the Annexes of Commission Regulation (EU) (No 200/2010, No 517/2011, No 200/2012 or No 1190/2012).

- Testing scheme (diagnostic methods used) and case definition: a description of the diagnostic methods used (a description of the diagnostic flow with relation to parallel and serial testing) and the applied criteria to define a ‘case’ based on the diagnostic methods used. A ‘case’ can be interpreted broad as a ‘positive/infected/contaminated’ animal, food or feed matrix. Example: Also the confirmation of *Mycobacterium bovis* can be done using a specific PCR or isolation methods.
This confirmation is often required in herds/flocks where one or some animals reacted positive with a screening test (e.g. singular or comparative intradermal skin test). In case there is no confirmation of \textit{M. bovis} the level of ‘positivity’ remains at the \textit{Mycobacterium tuberculosis} complex level. The latter is important for prevalence or incidence and the reporting of \textit{Mycobacterium tuberculosis} complex spp. cases. It should be clear how a flock (of animals) is defined positive/infected using different analytical methods (e.g. WNV, Toxoplasma, Q-fever, etc.). Whenever possible, a reference to standard methods used is made (such as national, ISO or European Norm (EN) standard methods), or to the methods prescribed by the legislation. In the case of text forms for the disease status is important to report the analytical method as this is not included in the data model. For ovine and caprine brucellosis the used methods could be: RBT/CFT, are laid down in Annex C of Council Directive 91/68/EEC. A reference to the legislation is recommended in case that these methods have been used. If other methods have been used (e.g. BST, ELISA, isolation/identification or PCR) these tests or methods should be described, including the interpretation of results applied, e.g. tests used for confirmation purposes. For tuberculosis in bovine animals and in farmed deer the methods to be used are laid down in Annex B of Council Directive 64/432/EEC: the gamma-interferon assay (as referred to in the World Organisation for Animal Health (OIE) Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) and the tuberculin skin test (single or comparative). A reference to the legislation is recommended in case these methods have been used. If other methods have been used, these diagnostic tests should be described, including the interpretation of the results applied, e.g. stained smears or immunoperoxidase techniques followed by cultivation of the organism on a primary isolation medium, determination of cultural and biochemical properties, PCR and genetic fingerprinting (Directive 64/432/EEC).

If control programmes are approved by the EC a link to the specific programme of the Commission website can be provided.

For the disease status it is desirable to provide a description of the eradication or surveillance system:
- for the non-OTF/non-OBF and non-ObmF MSs, the eradication, control and surveillance programmes in place to combat the disease;
- for OTF/OBF/ObmF regions or MSs, the procedures laying down the methods of surveillance for maintaining the status of the herds;
- the approved EU co-financed eradication programmes, including the adopted/specific measures;
- in non-OTF/non-OBF/non-ObmF MSs, this information should be provided preferably at the regional level, if appropriate.

The information on monitoring and control systems in place for \textit{Trichinella} is asked for the following different categories:
- general;
- \textit{Trichinella}-free holdings;
- officially recognised holdings/compartment applying controlled housing conditions.

In case that the categories ‘free holdings’ and/or ‘officially recognised holdings/compartment applying controlled housing conditions’ are not available or do not apply for the MS the category ‘general’ should be used.

The following information would be useful:
- information on the use of \textit{Trichinella} testing relating to meat inspection, specifically whether or not all slaughtered pigs and horses are investigated;
- monitoring and surveillance schemes or programmes in farmed and wild boar, horses, breeding pigs (sows and boars) and fattening pigs and other indicator animals, especially in wildlife, e.g. foxes, raccoon dogs.

Description of the monitoring and control system for \textit{Echinococcus} should include:
- Monitoring schemes/surveillance strategies separately in domestic and stray dogs and food-producing animals for \textit{E. granulosus};
- Monitoring schemes/surveillance strategies in wildlife, especially in foxes and raccoon dogs for \textit{E. multilocularis};
- Monitoring policy at slaughterhouse level for \textit{E. granulosus} (meat inspection based on national and EU legal requirements) for intermediate hosts. It is extremely important to group the investigated animals per species and age category (e.g. <1 year; >1 year);
Differentiation of the regions according to the status (endemic, emerging, free) for both *E. granulosus* and *E. multilocularis*, if available.

Description of the monitoring and control system for *Toxoplasma* is relevant for domestic cats, sheep, goats and pigs.

For West Nile virus is relevant to define whether the data derive from active or passive monitoring (including clinical investigations).

2. Measures in place

Under this title, the eradication, preventive and control measures in place, including vaccination if applicable should be reported. A description of the implemented measures are/were in case of positive samples/batches/herds/animals (withdrawal from market, culling and destruction of animals, etc.) should be described and what the impact was of these measures.

The same can be provided for vaccination policy or approved vaccination programmes. It is of special interest if vaccination is applied mandatorily or voluntarily or recommended for certain animal populations. The description should include, at least, a description of the vaccine, characteristics of the animals to be vaccinated (age, sex), area where vaccination is to be implemented, special measures for marking the vaccinated animals, etc.

Preventative measures other than vaccination may include actions taken at different levels of the food chain (e.g. prohibition on marketing of unpasteurised milk and recommendations on food consumption for susceptible consumer groups). Regarding animals, it may cover, for example, bio-security measures at farm/holding level or recommendations for zoos.

Examples of preventive measures in animals can be:

- *Coxiella burnetii* in animals: testing of animals and checking origin of herds when introducing new animals into a Q fever-free area, disinfection of utensils used for delivery, and placentas and foetuses picked up and destroyed as soon as possible in order to prevent their ingestion by domestic or wild carnivores;
- For *Listeria monocytogenes* in animals: disposal of potentially infective materials such as aborted animal foetuses, birth excretions and the bodies of dead animals;
- For *Trichinella*: controlled housing conditions in pig farms, effective waste and garbage management, pest control and education and training for farmers and the public;
- For *Echinococcus*: anti-parasitic treatments in pets (dogs) and wildlife, meat inspection procedures at slaughterhouses, good management practices when handling intestines and organs of infected animals (in order to avoid consumption by dogs or cats), recommendations to consumers and food handlers (especially for berries and mushrooms) and effective management of stray dogs;
- For *Toxoplasma*: mandatory vaccination policy in sheep and specific recommendations/guidelines given to pregnant women;
- For cysticercosis: high standard of human sanitation, following the good general practice of cooking meat thoroughly (the thermal point of death of cysticerci is 57°C) and compulsory meat inspection;
- For rabies: national control strategy for pet animals and vaccination programmes in foxes.

In general, for foodstuffs, national microbiological criteria or guidelines should be described, as well as provisions or recommendations concerning the use of certain foodstuffs containing potentially hazardous agents, such as raw eggs, unpasteurised milk, etc., or special recommendations for susceptible populations of consumers.

Examples of preventive measures in different food categories can be:
- For L. monocytogenes: national guidelines for pregnant women or other susceptible population groups concerning the consumption of food with a high risk of contamination with L. monocytogenes.
- For Brucella: report provisions or recommendations concerning the use and marketing of raw milk and cheeses made of raw or low heat-treated milk, with reference to the relevant legislation.

If control programmes are approved by the EC a link to the specific programme of the Commission website can be provided. The control programmes may be national or regional, and they may be approved nationally or by the Commission and co-financed by the EU, based on Regulation (EU) No 652/2014 of the European Parliament and of the Council of 15 May 2014 on expenditure in the veterinary field. Control programmes run by the industry/food business operators may also be included. The nature of the control programmes should be described including whether the programme is, for example, voluntary or mandatory, national or regional, approved by the EU or at national level or co-financed. The main features of the programme are given. It is advisable to report separately the information derived from official programmes and from programmes run by the industry.

3. Notification system in place to the national competent authority

It should be described if a notification system is in place including its legal basis and whether the notification in food/feed/animals is mandatory or not.

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

The results of the investigations reported in the corresponding tables should be summarised in a narrative text. The major findings and the relevant conclusions based on the results should be presented.

A national evaluation of the current situation as well as the trends and sources of the specific zoonotic agent should be described. The results are interpreted in relation to their importance to public health in the reporting country. It is essential to evaluate the observed trends comparing previous years (decrease, increase, stable trends) and where possible evaluate the significance of this trend. The major important sources (e.g. major food categories such as meat and meat products, cheeses, milk, fruit and vegetables or cattle, pigs, wild animals, etc.) of the observed infections should be described.

The relevance of the (positive) findings in feedingstuffs/animals/foodstuffs and the observed human cases (as a source of infection) should be evaluated. The role of feedingstuffs as a source of infection for animals, and similarly the role of animals as a source of contamination for foodstuffs, should also be considered.

Analyses of the results for the disease status should preferably be made at both regional and national level, when appropriate. Long-term trends are recommended (for the last 5 years), and reflection on the sources of infection is of special interest. The figures on existing herds and their status at the end of the period; the results of surveillance and investigations of suspected cases should be reported.

Analyses of the results for Salmonella in animal populations with control programmes set by EU legislation—analyses of results from flocks at different production levels, as well as corresponding serovar distributions, is important. The impact of the control programmes in place on the prevalence and number of human cases is also very relevant.

Analyses of the results for Trichinella spp., is preferable to address

- the results of meat inspection for Trichinella spp.;
- the results of other monitoring and control programmes, especially in indicator animals and wild animals.

Regarding the positive cases in slaughtered animals, the following information is requested:
- a description of positive cases and of the *Trichinella* species identified, as well as the age of the affected animals;
- the type of management system they originated from;
- the diagnostic method used;
- the degree of infestation with the name of the tested muscle;
- outdoor access during the animals’ lifetime;
- feeding practices;
- any other relevant information.

Analyses of the results for *Echinococcus* should include, if available, the analyses of results from meat inspection, dogs and wildlife for *E. granulosus* and *E. multilocularis* separately.

In the analyses of results for *Cysticercus*, it is preferable to address:
- The results of meat inspection for the presence of cysticerci;
- An estimation of level of infection and whether or not the carcasse is condemned.

In the analyses of results for rabies, it is preferable to address:
- The number of confirmed rabies cases in animals and the sources of infection. The number of investigated animals should be recorded as well as the species tested.
- The results and effectiveness of the vaccination programmes in domestic and wildlife animals.
- A clear distinction between sylvatic and bat rabies cases when describing rabies in wildlife.
- *Lyssavirus* type and subtypes, and distinction of virus isolates from terrestrial animal species (rabies virus) from those circulating in European bats (EBLV-1 or EBLV-2).

5. Additional information

Any other information relevant to the monitoring of the zoonoses in question can be described under this title.

6.5. Food-borne outbreaks

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

The reporting system and procedures in place for identification, epidemiological investigation and reporting of food-borne outbreaks in the reporting country must be described. This should include the authorities and institutions involved in the activities, their roles and the coordination between the authorities, the legal basis for the activities, mandatory and voluntary activities and the frequency of reporting.

All relevant changes in the national reporting system that took place since the last reporting should be indicated. If new case definitions have been implemented, this should be described in detail.

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

Any differences between the national system and the EU system should be outlined here. For example, if a given national reporting system does not record household outbreaks or does not differentiate between general or household outbreaks, this should be mentioned here. In addition, if outbreaks caused by toxins are not reported to the national system, this should be reported here.

3. National evaluation of the reported outbreaks in the country

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.
It should be described if the number of food-borne outbreaks and, possibly, also the number of human cases/deaths/illnesses in these outbreaks has increased, decreased or remained stable over the years. Possible reasons for the observed trends should also be described. For example, an increase in the number of food-borne outbreaks over several years might be related to a change in food consumption, trade patterns or other factors.

Example: ‘In 2011, the municipal food control authorities notified 58 food poisoning outbreaks, of which 53 were associated with food and five with drinking water. The number of recorded outbreaks has constantly decreased since 2005. In 2010, the number of outbreaks was 63, almost 60% less than in 2004. In 2009, the number of outbreaks slightly increased for the first time in five years due to changes in the reporting system.’

The relevance of different types of places of food production and preparation in outbreaks including descriptions of the distribution of the outbreaks according to the location of exposure and the relevance of different locations is reported, including possible trends.

Example: ‘More than 60 % of the outbreaks were reported to be linked to mass catering facilities. Salmonella outbreaks are detected mainly in private homes and commercial restaurants.’

The severity of disease caused by an outbreak can be characterised by reporting the number of deaths, illnesses and hospitalisations. An evaluation of disease severity could be carried out by presenting the trends developing over a period of several years. In the context of food-borne outbreak reporting, the evaluation of the severity of diseases related to food-borne outbreaks facilitates the evaluation of the public health impact of the outbreaks.

Example: ‘On average, an outbreak caused by viruses involved 22 human cases, which was almost three times more than an outbreak caused by Salmonella (8 cases) and four times more than Campylobacter (4 cases). However, when comparing the proportion of cases admitted to hospital out of the total number of cases, approximately twice as many Salmonella cases were admitted to hospital compared to cases infected with Campylobacter and almost four times more compared to cases infected with food-borne viruses.’

4. Descriptions of single outbreaks of special interest

Food-borne outbreaks of special interest can be reported providing relevant details.

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

Control measures or other actions taken at the national level to control or prevent food-borne outbreaks in a MS during the reporting year should be described. If available, evaluations of the effectiveness of measures should be reported.

Example: ‘Since 2005, logistic slaughtering is applied for Salmonella-free poultry in order to prevent cross-contamination.’

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

Suggestions to the EU risk managers can be provided by MSs regarding proposed actions related to either specific outbreaks or reporting of data.

7. Additional information

Any other information relevant to food-borne outbreaks can be described under this title.

References


European Commission (EC), online. Outcome of the evaluation procedure of eradication, control, and surveillance programmes submitted by Member States for Union financial contribution for 2017 and following years: list of the programmes technically approved and final amount allocated to each programme. Available online: https://ec.europa.eu/food/funding/animal-health/national-veterinary-programmes_en.


Appendix A — General definitions

Case definition—definition stating when the sample is considered to be positive for the zoonotic agent or when the person, animal, herd or flock is considered to be infected with the zoonotic agent.


Notification system—a system whereby the disease or infection has to be reported to the competent authority based on a legal obligation.

Official control—any form of control that the competent authority or the Community performs for the verification of compliance with feed and food law, animal health and animal welfare rules (Regulation (EC) No 882/200434)

Population—the entire set of subjects (items, batches) to which the findings of a study are to be extrapolated or from which information is required.

Positive finding—situation stating when the sample (a foodstuff, feedingstuff or a batch of them) is considered to be positive for the zoonotic agent.

Prevalence—the proportion of existing positive cases in a population at that specified time.

Sample—set composed of one or several units or a portion of matter selected by different means in a population, or in an important quantity of matter, that is intended to provide information on a given characteristic of the studied population or matter and to provide a basis for a decision concerning the population or matter in question or concerning the process that produced it (Regulation (EC) No 2073/2005).

Sample size—the number of units randomly chosen from the sampling frame.

Sampling frame—complete list of all units of the population, which can be sampled.

Specimen—unit or portion of a matter that is sampled and intended to be analysed.

Zoonosis—any disease and/or infection that is naturally transmissible directly or indirectly between animals and humans (Directive 2003/99/EC).

Zoonotic agent—any virus, bacteria, fungus, parasite or other biological entity that is likely to cause a zoonosis (Directive 2003/99/EC).

Appendix B — Definitions of foodstuffs and feedingstuffs

**Carcase**—the body of an animal after slaughter and dressing (Regulation (EC) No 853/2004).

**Compliance with microbiological criteria**—obtaining satisfactory or acceptable results set in Annex I when testing against the values set for the criteria through the taking of samples, the conduct of analyses and the implementation of corrective actions, in accordance with food law and the instructions given by the competent authority (Regulation (EC) No 2073/2005).

**Contamination**—the presence or introduction of a hazard (Regulation (EC) No 852/2004).

**Feed (or feedingstuff)**—any substance or product, including additives, whether processed, partially processed or unprocessed, intended to be used for oral feeding to animals (Regulation (EC) No 178/2002).

**Feed materials**—various products of vegetable or animal origin, in their natural state, fresh or preserved, and products derived from the industrial processing thereof, and organic or inorganic substances, whether or not containing additives, which are intended for use in oral animal feeding, either directly as such or after processing, in the preparation of compound feedingstuffs or as carriers of premixtures (Regulation (EC) No 767/2009).

**Food (or foodstuff)**—any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be, ingested by humans (Regulation (EC) No 178/2002).

**Food intended for infants**—food specifically intended for infants (Directive 2006/141/EC).

**Food intended for special medical purposes**—dietary food for special medical purposes (Directive 99/21/EC).

**Food safety criterion**—criterion defining the acceptability of a product or a batch of foodstuff applicable to products placed on the market (Regulation (EC) No 2073/2005).

**Fresh meat**—meat that has not undergone any preserving process other than chilling, freezing or quick freezing, including meat that is vacuum wrapped or wrapped in a controlled atmosphere (Regulation (EC) No 853/2004).

**Marine biotoxins (of live bivalve molluscs)**—poisonous substances accumulated by bivalve molluscs, in particular as a result of feeding on plankton containing toxins (Regulation (EC) No 853/2004).

**Meat**—edible parts of the animals below mentioned, including blood (Regulation (EC) No 853/2004):

- ‘Domestic ungulates’—domestic bovine (including *Bubalus* and *Bison* spp.), porcine, ovine and caprine animals, and domestic solipeds.
- ‘Poultry’—farmed birds, including birds that are not considered to be domestic but which are farmed as domestic animals, with the exception of ratites, which are considered to be ‘farmed game’.
- ‘Lagomorphs’—rabbits, hares and rodents.
- ‘Wild game’—wild ungulates and lagomorphs, as well as other land mammals that are hunted for human consumption and are considered to be wild game under the appropriate law in the MS concerned, including mammals living in enclosed territory under conditions of freedom similar to those of wild game and wild birds that are hunted for human consumption.
- ‘Farmed game’—farmed ratites and farmed land mammals other than those referred to as ‘domestic ungulates’.
- ‘Small wild game’—wild game birds and lagomorphs living freely in the wild.

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• ‘Large wild game’—wild land mammals living freely in the wild that do not fall within the definition of small wild game.

**Meat preparations**—fresh meat, including meat that has been reduced to fragments, which has had foodstuffs, seasonings or additives added to it or which has undergone processes insufficient to modify the internal muscle fibre structure of the meat and thus to eliminate the characteristics of fresh meat (Regulation (EC) No 853/2004).

**Meat products**—processed products resulting from the processing of meat or from the further processing of such processed products, so that the cut surface shows that the product no longer has the characteristics of fresh meat (Regulation (EC) No 853/2004).

**Microbiological criterion**—criterion defining the acceptability of a product, a batch of foodstuffs or a process, based on the absence, presence or number of microorganisms, and/or on the quantity of their toxins/metabolites, per unit(s) of mass, volume, area or batch (Regulation (EC) No 2073/2005).

**Minced meat**—boned meat that has been minced into fragments and contains less than 1% salt (Regulation (EC) No 853/2004).

**Offal**—fresh meat other than that of the carcase, including viscera and blood (Regulation (EC) No 853/2004).

**Process hygiene criterion**—criterion indicating the acceptable functioning of the production process. Such a criterion is not applicable to products placed on the market. It sets an indicative contamination value above which corrective actions are required in order to maintain the hygiene of the process in compliance with food law (Regulation (EC) No 2073/2005).

**Processed products**—foodstuffs resulting from the processing of unprocessed products. These products may contain ingredients that are necessary for their manufacture or to give them specific characteristics (Regulation (EC) No 852/2004).

**Processing**—any action that substantially alters the initial product, including heating, smoking, curing, maturing, drying, marinating, extraction, extrusion or a combination of those processes (Regulation (EC) No 852/2004).

**Products of animal origin**—food of animal origin, including honey and blood; live bivalve molluscs, live echinoderms, live tunicates and live marine gastropods intended for human consumption; and other animals destined to be prepared with a view to being supplied live to the final consumer (Regulation (EC) No 853/2004).

**Raw milk**—milk produced by the secretion of the mammary gland of farmed animals that has not been heated to more than 40°C or undergone any treatment that has an equivalent effect (Regulation (EC) No 853/2004).

**Ready-to-eat food**—food intended by the producer or the manufacturer for direct human consumption without the need for cooking or other processing in order to eliminate or reduce to an acceptable level microorganisms of concern (Regulation (EC) No 2073/2005).

**Shelf life**—either the period preceding the ‘use by’ date or that preceding the minimum durability date, as defined in Article 24 of Regulation (EU) 1169/2011.

**Unprocessed products**—foodstuffs that have not undergone processing and including products that have been divided, parted, severed, sliced, boned, minced, skinned, ground, cut, cleaned, trimmed, husked, milled, chilled, frozen, deep-frozen or thawed (Regulation (EC) No 852/2004).

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Appendix C — Definitions of animals


**Animals for breeding or production**—bovine animals (including the species *Bison bison* and *Bubalus bubalus*) and swine other than animals for slaughter, including those intended for breeding, milk or meat production, or draft purposes, shows or exhibition with the exception of animals taking part in cultural and sporting events (Directive 64/432/EEC).  

**Animals for slaughter**—bovine animal (including the species *Bison bison* and *Bubalus bubalus*), swine or animals of the ovine or caprine species intended to be taken to a slaughterhouse or assembly centre from which it may proceed only to slaughter (Directive 64/432/EEC and Directive 91/68/EEC).  

**Breeding poultry**—poultry 72 hours old or more, intended for the production of hatching eggs (Directive 2009/158/EC).  

**Day-old chicks**—all poultry less than 72 hours old, not yet fed; however, Barbary ducks may be fed (Directive 2009/158/EC).  

**Epidemiological unit**—group of animals of epidemiological importance in terms of the transmission and maintenance of infection.  

**Hatching eggs**—eggs for incubation, laid by poultry (Directive 2009/158/EC).  

**Controlled housing conditions (in integrated production systems for pigs)**—a type of animal husbandry in which swine are kept at all times under conditions controlled by the food business operator with regard to feeding and housing (Commission Regulation (EC) No 2075/2005).  

**Productive poultry**—poultry 72 hours old or more, reared for the production of meat and/or eggs for consumption or for restocking supplies of game (Directive 2009/158/EC).  

**Period:**

- **Rearing period**—the period in which birds are reared for production purposes. For laying hens this period starts when the chickens are one day old and ends when they enter the laying phase at 18 weeks, whereas for broilers this period starts when the chickens are one day old and ends when they are one week old.  
- **Production period**—the period wherein birds are productive. For laying hens this period starts when they enter the laying phase at 18 weeks and ends 3 weeks before slaughter, whereas for broilers this period starts when the chickens are 1 week old and ends when they are slaughtered (usually at 6 weeks).  
- **Before slaughter**—the period just before sending animals to slaughter (typically 2 or 3 before).

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Appendix D – Regional reporting scenarios

According to the level of detail available, the following scenarios are possible:

In the following examples, it is assumed that Country ‘X’ (NUTS_LEVEL_1) has 5 regions (NUTS_LEVEL_2) and 100 provinces (NUTS_LEVEL_3).

**Scenario 1**

Only data at country level are available:

<table>
<thead>
<tr>
<th>Matrix</th>
<th>zoonosis</th>
<th>sampArea</th>
<th>totUnits Tested</th>
<th>totUnits Positive</th>
<th>units Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Country (NUTS_LEVEL_1)</td>
<td>20</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

**Scenario 2**

Data at country level and data for all regions (the country has 5 regions) are available:

<table>
<thead>
<tr>
<th>Matrix</th>
<th>zoonosis</th>
<th>sampArea</th>
<th>totUnits Tested</th>
<th>totUnits Positive</th>
<th>units Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Country (NUTS_LEVEL_1)</td>
<td>20</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 1 (from NUTS_LEVEL_2)</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 2 (from NUTS_LEVEL_2)</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 3 (from NUTS_LEVEL_2)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 4 (from NUTS_LEVEL_2)</td>
<td>4</td>
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<td>0</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 5 (from NUTS_LEVEL_2)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**Scenario 3**

Data at country level and data for some regions and some provinces are available:

<table>
<thead>
<tr>
<th>Matrix</th>
<th>zoonosis</th>
<th>sampArea</th>
<th>totUnits Tested</th>
<th>totUnits Positive</th>
<th>units Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Country (NUTS_LEVEL_1)</td>
<td>20</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 1 (from NUTS_LEVEL_2)</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 2 (from NUTS_LEVEL_2)</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Province/City A of the Region 2 (from NUTS_LEVEL_3)</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Province/City B of the Region 2 (from NUTS_LEVEL_3)</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pigs - fattening pigs - raised under controlled housing conditions</td>
<td>Trichinella spiralis</td>
<td>Region 3 (from NUTS_LEVEL_2)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Please note that, this scenario, Region 4 and Region 5 are not reported as data are not available.
Abbreviations

BSE  bovine spongiform encephalopathy
BST  brucellosis skin test
CFT  complement fixation test
cfu  colony-forming unit
DCF  Data Collection Framework
DIN  Deutsches Institut für Normung
DNA  deoxyribonucleic acid
EBLV  European bat Lyssavirus
EC  European Commission
ECDC  European Centre for Disease Prevention and Control
EEC  European Economic Community
EFSA  European Food Safety Authority
ELISA  enzyme-linked immunosorbent assay
EU  European Union
EURL  European Union Reference Laboratory
FAT  fluorescent antibody test
FISH  fluorescence in situ hybridisation
HACCP  Hazard Analysis Critical Control Point
HPLC  high-performance liquid chromatography
IB  Immunoblotting
ICH  Immunohistochemistry
IFA  immunofluorescence assay test
IFAT  immunofluorescence antibody test
Ig  immunoglobulin
IHA  indirect haemagglutination test
ISO  International Organization for Standardization
LAT  latex agglutination test
MAC-ELISA  IgM-capture ELISA
MAT  modified agglutination test
MRT  milk ring test
MS  Member State of the European Union
MSRV  Rappaport–Vassiliadis medium semi-solid modified
NMKL  Nordic Committee on Food Analysis
NUTS  Nomenclature of Territorial Units for Statistics
OBF  Officially Brucellosis Free
ObmF  Officially *Brucella melitensis* Free
OIE  World Organisation for Animal Health
OTF  Officially Tuberculosis Free
PCR  polymerase chain reaction
RABV  rabies virus
RBT  Rose Bengal test
RT-PCR  reverse transcription polymerase chain reaction
SAT  slow agglutination test
TSE  transmissible spongiform encephalopathies
STEC  Shiga toxin-producing *Escherichia coli*
Stx  Shiga toxin
VT  verotoxigenic
VTEC  verotoxigenic *Escherichia coli*
WHO  World Health Organization
WNV  West Nile virus
XML  eXtensible Markup Language