**TECHNICAL REPORT**

# "Schmallenberg" virus: analysis of the epidemiological data [1](April 2012)

**European Food Safety Authority**[2, 3]

European Food Safety Authority (EFSA), Parma, Italy

## SUMMARY

Following a request from the European Commission, the European Food Safety Authority (EFSA) issued a technical report in February 2012 on likely epidemiological scenarios in Europe in relation to a recently detected virus provisionally named "Schmallenberg" virus (SBV) (Simbu serogroup, Bunyaviridae family, genus *Orthobunyavirus*), found in ruminants. The report also included guidance on data to be collected in Member States, with harmonised case definitions and reporting guidelines for a minimum dataset at herd/flock level and an extended dataset at animal level. This second epidemiological report presents the analysis of the submitted data (1 August 2011 – 16 April 2012), updating the previously published report on the epidemiological situation of SBV.

At present, eight Member States (Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Spain and United Kingdom) have confirmed cases of SBV. All affected Member States have reported the number of confirmed herds following viral detection by PCR, virus neutralisation test or serological confirmation and France, Italy, Luxembourg, the Netherlands, Spain and United Kingdom, have also reported the number of suspect herds. Switzerland reported herds where malformed offspring were tested by RT-PCR and the dams by serological testing, all results were negative. Ireland reported surveillance testing of herds and all herds were negative. Estonia reported that there have been no suspect or confirmed herds in the country. Moreover Demark and Norway reported suspect herds, in all herds foetuses/neonates were tested by RT-PCR and the results were negative. The total number of SBV confirmed herds in Europe as of the 16 April 2012 is 3444. No confirmed acute cases have been reported in adult animals in the year of 2012.

The data shows a decrease in the number of reports of SBV confirmed herds following a peak in week 9 (February, 27 – march, 4) of 2012. The decrease after week nine is clearly observed in sheep in both numbers of confirmed and suspect herds. However in cattle there is no clear decrease and any drop in confirmed and suspect herds could be due to incomplete reporting for the month of April. The decrease in number of confirmed herds is most probably linked to the end of the lambing season in

[1] On request from the European Commission, Question No EFSA-Q-2012-00549, approved on 30 April 2012.

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affected countries, the fact that lambs and goat kids born in April would have been in a stage of gestation potentially vulnerable to SBV when vector levels were low and other factors including reporting priorities in Member States.

The data available only allows an impact assessment based upon the comparison between the number of SBV confirmed herds and the total number of herds in each affected country by species. For all affected countries, the number of herds with at least one SBV confirmed animal is low in comparison with the total number of herds. This analysis should be interpreted cautiously since under-reporting or lack of diagnostic confirmation may affect the ratio.

The data provided allows an understanding of the temporal and geographical distribution of the SBV outbreak. In order to fully characterise the outbreak and the epidemiology of SBV in Europe, efforts to obtain comparable data on the number of herds tested, the number of newborns and foetuses within a herd with arthrogryposis hydranencephaly syndrome (AHS) type clinical signs and the number of animals within the herd tested by either direct or indirect laboratory methods are required. This could be achieved by following up selected herds or by performing a survey to properly evaluate the impact and magnitude of the spread of SBV infection. As more data becomes available the impact assessment for SBV (in particular within herd and local impact) could be subject to change.



**Key words**

Schmallenberg virus (SBV), data collection, epidemiological analysis, impact

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## BACKGROUND AS PROVIDED BY EUROPEAN COMMISSION

A recently detected virus circulated in the EU in the second semester of 2011 in domestic ruminants (cattle, sheep and goats) and in wild ruminants. The virus has been provisionally named "Schmallenberg" virus (SBV). The information available on the SBV virus genome suggests that this virus is part of the Simbu serogroup of the *Bunyaviridae* family, genus *Orthobunyavirus*, and that this virus causes non-specific clinical signs in cattle and congenital malformations, at the moment mainly in sheep and less frequently in goats.

The technical working group organised by the Commission services on 20 January 2012, in which EFSA participated, discussed the scientific assistance that the Commission and Member States may need in relation to this virus.

In particular, it was concluded that EFSA could assist the Commission and the Member States by means of the preparation of reports on the epidemiological situation based on the data gathered by the Member States.

Therefore, in the context of Article 31 of Regulation (EC) No 178/2002, EFSA has been asked to provide scientific assistance to the Commission.

## TERMS OF REFERENCE AS PROVIDED BY THE EUROPEAN COMMISSION

EFSA is requested to deliver:

1. A preliminary analysis of the likely epidemiological scenarios that could be observed in the next months, based on the existing knowledge on viruses of the Simbu virus serogroup and other vector borne epidemics in the region. This preliminary analysis should be provided by 6 February 2012 to be able to share it with the Member States at the SCoFCAH meeting organised on 7 February 2012.

2. An analysis of the epidemiological data already available, taking also into account the expected seasonal pattern of virus circulation. This analysis should also include the information on the transmission routes for the virus. A first report should be produced by 31 March 2012, followed by regular updates on the epidemiological situation, every two months.

3. Guidance on data to be collected in Member States in order to optimise coordination to address this request. This may include the development of a case definition, datasets at both individual and herd level and minimum reporting guidance on epidemiological investigations to facilitate a future assessment of the impact of the infection and the risk of spread.

4. A report on the overall assessment of the impact of this infection on animal health, animal production and animal welfare together with a characterisation of the pathogen by 31 May 2012. This report will also need to be regularly updated but at a later stage.

The use of the EFSA Data Collection Framework (DCF) as a data exchange portal will be a valuable asset to collect information from Member States in a structured manner, with a view to its use for further risk assessment, but this will need to be coordinated with DG SANCO. This request should be kept under review with the aim of adapting it in the light of the evolution of the infection and the information that will become available in the coming weeks and months.

## SCOPE

Guidance on data to be collected in Member States in order to optimise coordination was provided in a previous EFSA report (EFSA 2012[4]). The guidance included harmonised case definitions for both suspect and confirmed adult and newborn animals as well as a definition for an affected herd.

[4] European Food Safety Authority; "Schmallenberg" virus: analysis of the epidemiological data. Supporting Publications 2012:EN-241. [31 pp.]. Available online: www.efsa.europa.eu/publications

Reporting guidelines for a minimum dataset at herd/flock level and an extended dataset at animal level were also provided. Such data is currently being collected within the affected Member States.

In this report, an analysis of the epidemiological data already available is presented in response to term of reference number 2. The reporting period for the data collected was defined as from the 1 August 2011 to the date of accepted submission (Table 2). This second epidemiological report presents the analysis of the submitted data (1 August 2011 – 16 April 2012), updating the previously published report on the epidemiological situation of SBV (EFSA 2012[5].). The mandate requested that the analysis should also include information on the transmission routes of the virus. However, information currently available to EFSA is not sufficient to address the question yet.

Furthermore, recommendations for reporting improvements are provided to achieve a more complete epidemiological description of the current situation and, in particular, a better understanding of the animal health and welfare impact of SBV infection in Europe. Regular updates on the epidemiological situation will be provided every two months.

## ASSESSMENT

### 1. Introduction

At present, eight Member States (Belgium, Germany, France, Italy, Luxemburg, the Netherlands, Spain, and United Kingdom) have confirmed cases of SBV. The latest epidemiological information can be found on the relevant competent authority websites (Table 1). Luxembourg does not have a website dedicated to SBV but immediate notifications and follow-up reports can be found at the OIE World Animal Health Information Database (WAHID) Interface (http://web.oie.int/wahis/public.php?page=reports_pdf_download).

**Table 1:** URL links to SBV information in the Member States

| | |
|---|---|
| **Belgium** | in Dutch: http://www.favv.be/dierengezondheid/schmallenberg/<br>in French: http://www.favv.be/santeanimale/schmallenberg/<br>in German : http://www.favv.be/tiergesundheit/schmallenberg/ |
| **France** | http://agriculture.gouv.fr/maladies-animales,11003 |
| **Germany** | http://www.fli.bund.de/en/startseite/current-news/animal-disease-situation/new-orthobunyavirus-detected-in-cattle-in-germany.html |
| **Italy** | http://www.izs.it/IZS/Engine/RAServePG.php/P/357410010300/M/250010010303 |
| **Netherlands** | http://www.vwa.nl/onderwerpen/dierziekten/dossier/schmallenbergvirus (see link for PDF - Aantallen meldingen per provincie) |
| **Spain** | http://rasve.mapa.es/Publica/InformacionGeneral/Enfermedades/enfermedades.asp |
| **United Kingdom** | http://www.defra.gov.uk/animal-diseases/a-z/schmallenberg-virus/ |

### 2. Data collection activities in Member States and reporting to EFSA

Chief Veterinary Officers (CVOs) of the EU Member States, Norway and Switzerland were requested to nominate an official reporting officer for their country. All reporting officers appointed (23 Member States, one EU Accession Country and two European Free Trade Association (EFTA) countries) were given access to the Data Collection Framework (DCF) EFSA system as well as detailed "SBV Data Reporting guidelines" (Appendix A), data entry templates and instructions for the use of Excel templates and the EFSA Data Collection Framework (DCF).

The deadline of 16 April 2012 was given for the second data submission and reporting officers were asked to focus on the minimum dataset as an initial priority. A data submission summary report is presented in Table 2.

[5] European Food Safety Authority; "Schmallenberg" virus: analysis of the epidemiological data. Supporting Publications 2012:EN-261. [32 pp.]. Available online: www.efsa.europa.eu/publications

**Table 2:** Data submitted by Member States

| | *Date of accepted submission* | *Submission of herd level data (Y/N)* | *Submission of extended dataset (Y/N)* | *Submission of data on suspect cases (Y/N)* | *Submission of data on confirmed cases (Y/N)* | *Submission of data on number of tested offspring (Y/N)* |
|---|---|---|---|---|---|---|
| **Belgium** | 2012-03-21 | Y | N | N | Y | N |
| **Denmark** | 2012-04-18 | Y | N | Y | Y | Y |
| **France** | 2012-04-16 | Y | N | Y | Y | unknown |
| **Germany** | 2012-04-17 | Y | N | N | Y | N |
| **Ireland** | 2012-04-16 | Y | N | Y | Y | Y |
| **Italy** | 2012-04-12 | Y | Y | Y | Y | Y |
| **Luxembourg** | 2012-04-17 | Y | N | Y | Y | Y |
| **Netherlands** | 2012-04-24 | Y | N | Y | Y | N |
| **Norway** | 2012-04-18 | Y | N | Y | Y | Y |
| **Spain** | 2012-04-18 | Y | N | Y | Y | Y |
| **Switzerland** | 2012-04-13 | Y | N | Y | Y | Y |
| **United Kingdom** | 2012-04-15 | Y | N | Y | Y | N |

## 3. Minimum dataset – herd level

The herd level dataset was based upon data currently being collected within the affected Member State. This dataset was designed with the specific purpose of case finding.

The dataset was used to obtain information on the spread of SBV in EU, both temporally (Date of first suspicious report) and spatially (Country/Region of affected herd/flock). The information, if available, can also be used to investigate possible impact of SBV in terms of observed birth outcomes and the proportion of Arthrogryposis Hydranencephaly Syndrome (AHS) cases observed in foetuses and newborns from 1 August 2011 to date of data transmission.

### 3.1. Number of affected herds

A summary of the number of suspect/confirmed herds meeting the case definition is presented in Table 3 by species and country.

All affected Member States have reported the number of confirmed herds following viral detection by PCR, virus neutralisation test or serological confirmation and France, Italy, Luxembourg, the Netherlands, Spain and United Kingdom, have also reported the number of suspect herds. Switzerland reported herds where malformed offspring were tested by RT-PCR and the dams by serological testing, all results were negative. Ireland reported surveillance testing of herds and all herds were negative. Estonia reported that there have been no suspect or confirmed herds in the country. Moreover Demark and Norway reported suspect herds, in all herds foetuses/neonates were tested by RT-PCR and the results were negative. Only Italy and Spain provided data for individual animals and the number of positive/negative animals. The European total for the number of herds tested is omitted from Table 3 due to missing information for some countries.

Germany, Italy, and the Netherlands have performed serological testing of adult herds. The Italian data indicates that two cattle herds which were negative for RT-PCR of foetuses and neonates, tested serologically positive in adults. In the Netherlands, the serological testing has focused on herds that previously tested positive for RT-PCR of foetuses and neonates. In order to obtain both within herd

and between herd prevalence estimates, better information on the number of herds tested and the number of animals within the herd tested should be collected and reported.

**Table 3:** Number of reported herds by species at country and EU level

| | | *Herds* | | | *Herds foetuses and neonates* | | *Herds adults* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Ruminant*** | ***Country*** | ***Reported*** | ***Suspect*** | ***SBV confirmed*** | ***RT-PCR tested*** | ***RT-PCR confirmed*** | ***RT-PCR tested*** | ***RT-PCR confirmed*** | ***Serology tested*** | ***Serology confirmed*** |
| Bison | Germany | 1 | | 1 | 1 | 1 | | | | |
| ***Bison*** | | ***1*** | | ***1*** | ***1*** | ***1*** | | | | |
| Cattle | Belgium* | 0 | | 275 | | 275 | 0 | | | |
| | Denmark | 13 | 13 | 0 | 13 | 0 | 0 | | 0 | |
| | France | 911 | 754 | 157 | | 157 | 0 | | | |
| | Germany | 313 | | 313 | | 295 | 8 | 8 | 13 | 13 |
| | Ireland | 44 | 44 | 0 | 44 | 0 | 1 | 0 | | |
| | Italy | 5 | 3 | 2 | 4 | 0 | 4 | 0 | 4 | 2 |
| | Luxembourg | 15 | 6 | 9 | 14 | 9 | 1 | 0 | 0 | |
| | Netherlands | 1111 | 928 | 183 | | 183 | | | 99 | 98 |
| | Norway | 2 | 2 | 0 | 2 | 0 | | | | |
| | Spain | 6 | 6 | 0 | 2 | 0 | 4 | 0 | 0 | |
| | United Kingdom | 67 | 39 | 28 | | 28 | 0 | | | |
| ***Cattle*** | | ***2487*** | ***1795*** | ***967*** | | ***947*** | ***18*** | ***8*** | ***116*** | ***113*** |
| Goats | Belgium | 2 | | 2 | | 2 | 0 | | | |
| | Denmark | 2 | 2 | 0 | 2 | 0 | 0 | | 0 | |
| | France | 60 | 44 | 16 | | 16 | 0 | | | |
| | Germany | 45 | | 45 | | 45 | | | | |
| | Ireland | 2 | 2 | 0 | 2 | 0 | 0 | | | |
| | Italy | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| | Luxembourg | 1 | 1 | 0 | 1 | 0 | 0 | | 0 | |
| | Netherlands | 36 | 30 | 6 | | 6 | | | 4 | 4 |
| | Spain | 1 | 1 | 0 | 0 | | 1 | 0 | 0 | |
| | Switzerland | 1 | 1 | 0 | 1 | 0 | 0 | | | |
| ***Goats*** | | ***151*** | ***81*** | ***70*** | | ***70*** | ***2*** | ***0*** | ***5*** | ***5*** |
| Sheep | Belgium* | 0 | | 167 | | 167 | 0 | | | |
| | Denmark | 11 | 11 | 0 | 11 | 0 | 0 | | 0 | |
| | France | 1706 | 638 | 1068 | | 1068 | 0 | | | |
| | Germany | 842 | | 842 | | 842 | | | | |
| | Ireland | 10 | 10 | 0 | 10 | 0 | 0 | | | |
| | Italy | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| | Luxembourg | 8 | 2 | 6 | 8 | 6 | 0 | | 0 | |

| | | Herds | | | Herds foetuses and neonates | | Herds adults | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Ruminant*** | ***Country*** | ***Reported*** | ***Suspect*** | ***SBV confirmed*** | ***RT-PCR tested*** | ***RT-PCR confirmed*** | ***RT-PCR tested*** | ***RT-PCR confirmed*** | ***Serology tested*** | ***Serology confirmed*** |
| | Netherlands | 333 | 226 | 107 | | 107 | | | 80 | 79 |
| | Norway | 1 | 1 | 0 | 1 | 0 | | | | |
| | Spain | 8 | 7 | 1 | 5 | 1 | 5 | 0 | 0 | |
| | Switzerland | 1 | 1 | 0 | 1 | 0 | 0 | | | |
| | United Kingdom | 336 | 121 | 215 | | 215 | 0 | | | |
| ***Sheep*** | | ***3257*** | ***1018*** | ***2406*** | | ***2406*** | ***6*** | ***0*** | ***81*** | ***79*** |
| ***Total*** | | ***5896*** | ***2894*** | ***3444*** | | ***3424*** | ***26*** | ***8*** | ***202*** | ***197*** |

* For Belgium only the total number of herds confirmed for each species was provided by the April deadline this is presented in the table above all subsequent analysis for Belgium is based on the dataset received in March

### 3.2. Temporal spread

The time of the first herd report by week per country is shown in Figure 1. An increase in the number of confirmed herds is observed up to the ninth week of the year 2012 followed by a steep decrease in the weeks 10 to 14. For week 15 onwards there may be incomplete information. No information was available for Belgium beyond week 11. A display of the cumulative numbers of confirmed herds over time per country is presented in Figure 2.

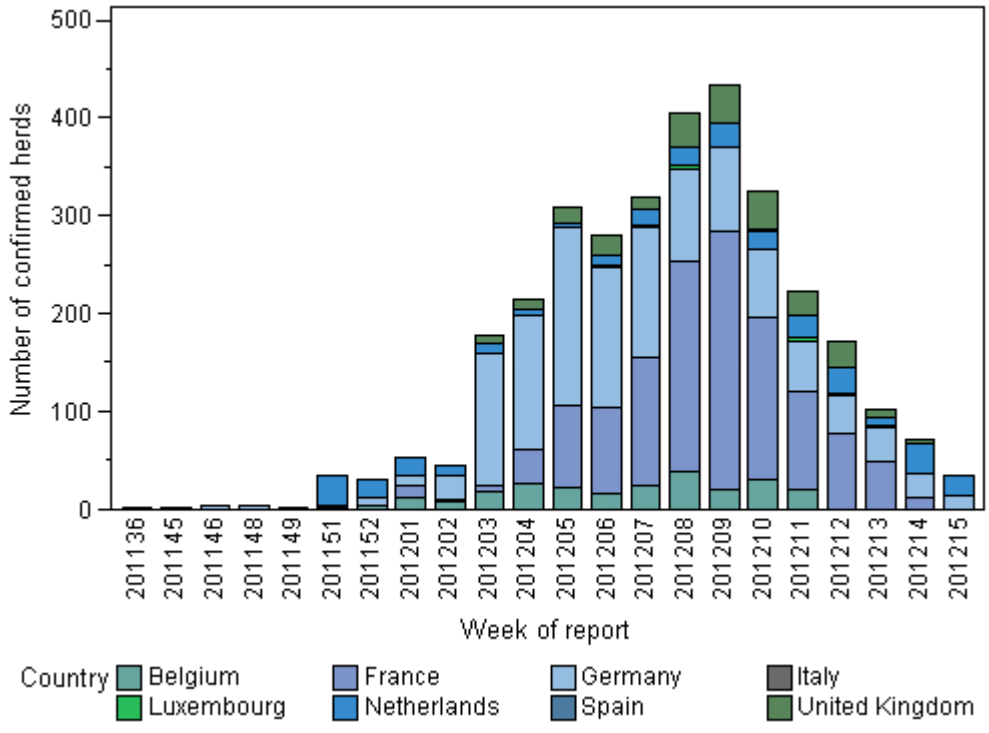



**Figure 1:** Confirmed herds by week of first report and country.

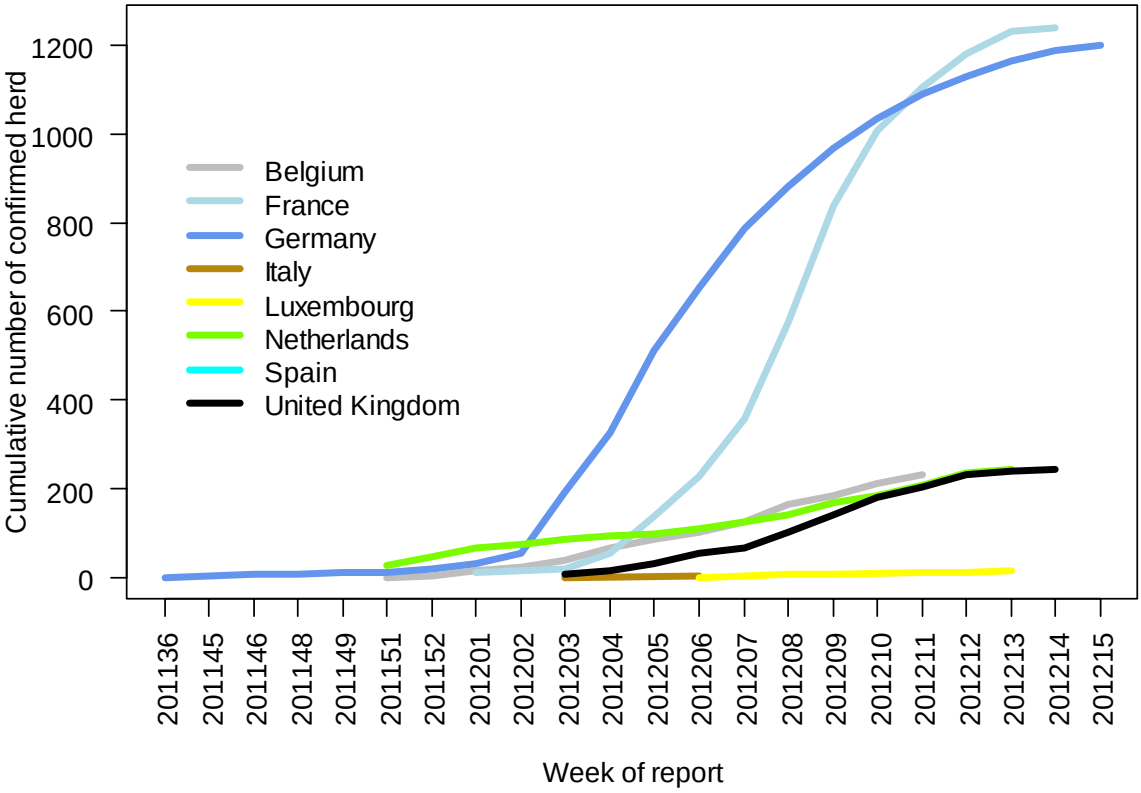
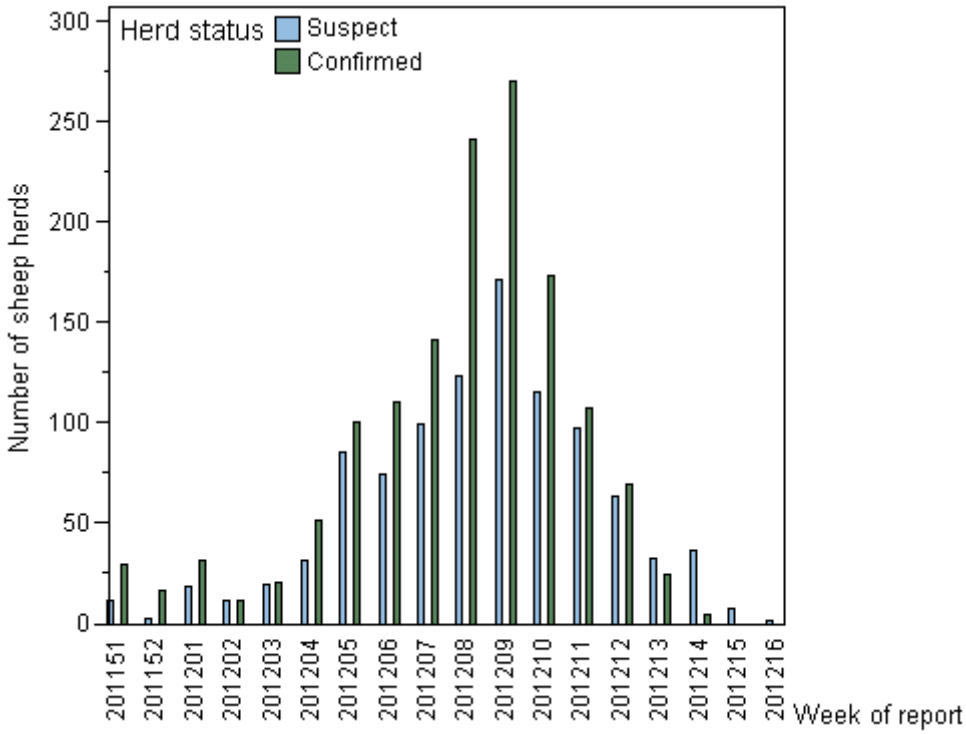
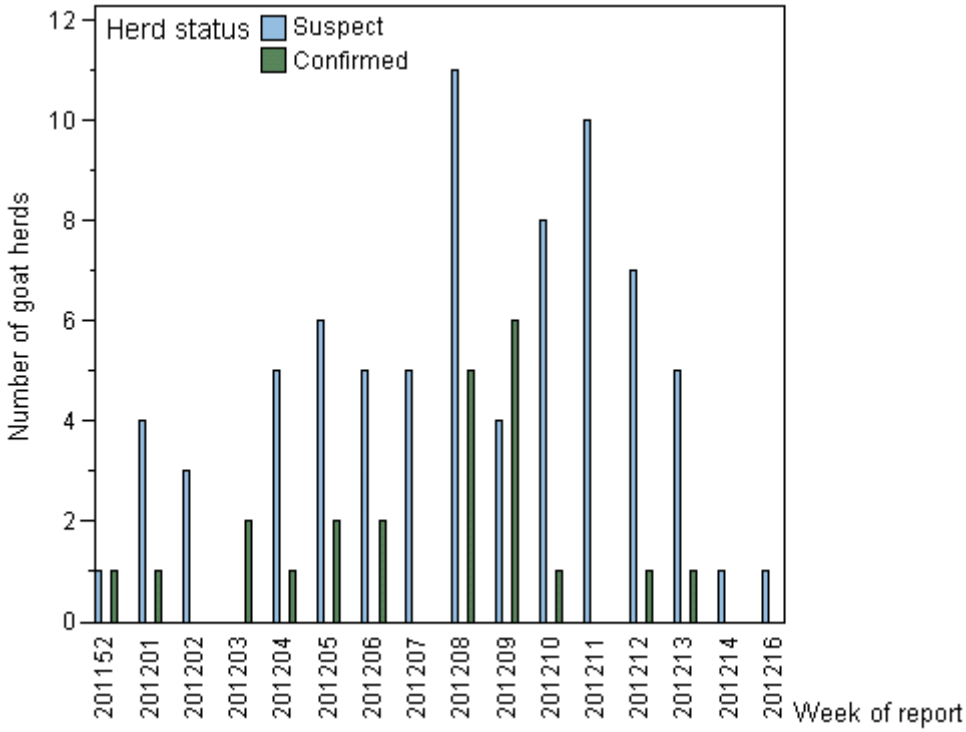



**Figure 2:** Cumulative confirmed herds over time per country.

A comparison between suspected herd patterns and confirmed herd patterns for each species was carried out (Figure 3: ) for those countries which reported both confirmed and suspect herds (France, Italy, Luxembourg, the Netherlands, Spain and United Kingdom). Regarding sheep the largest proportion of reported herds are confirmed (confirmed/suspect 1397/995) whereas for cattle the largest proportion of reported herds are suspect (confirmed/suspect 379/1736).

In the sheep the decrease after week nine (February, 27 – march, 4) noted in Figure 1 is also seen when confirmed versus suspect herds are analysed by species (Figure 3). This decrease is most probably linked to the end of the lambing season in affected countries, the fact that lambs and goat kids born in April would have been in a stage of gestation potentially vulnerable to SBV when vector levels were low and other factors including reporting priorities in Member States. In cattle there is no clear decrease and drop in confirmed and suspect herds could be due to incomplete reporting for the month of April. For goats, the limited number of reported herds does not allow a full evaluation of the temporal pattern.


Herd status
Suspect
Confirmed
Number of sheep herds
300
250
200
150
100
50
0
201151
201152
201201
201202
201203
201204
201205
201206
201207
201208
201209
201210
201211
201212
201213
201214
201215
201216
Week of report


Herd status
Suspect
Confirmed
Number of goat herds
12
10
8
6
4
2
0
201152
201201
201202
201203
201204
201205
201206
201207
201208
201209
201210
201211
201212
201213
201214
201216
Week of report

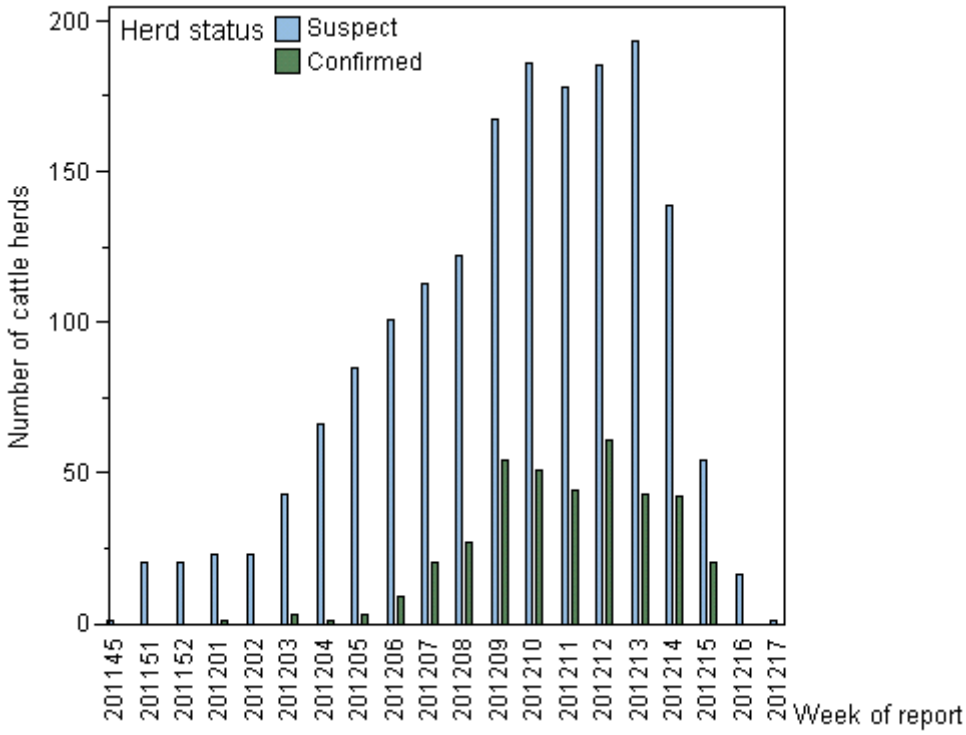



**Figure 3:** Confirmed and suspect herds by week of first report and species for those countries reporting confirmed herds as well as suspect herds (France, Italy, Luxembourg, the Netherlands, Spain and United Kingdom).

The observed pattern of case detection per species is in accordance with the hypothesis that infection may have occurred during a certain period of the gestation (EFSA 2012[6]). Figure 4 represents an estimation of the months of viral circulation at country level, assuming for sheep and goats a gestation period of 150 days and a midpoint vulnerable stage at 30 days, and for cattle a gestation period of 280 days and a midpoint vulnerable stage at 90 days. Figure 5 shows the data from all countries pooled. It is likely that virus circulation occurred between May and December 2011, with highest circulation of the virus in October 2011.

[6] European Food Safety Authority; "Schmallenberg" virus: analysis of the epidemiological data. Supporting Publications 2012:EN-241. [31 pp.]. Available online: www.efsa.europa.eu/publications

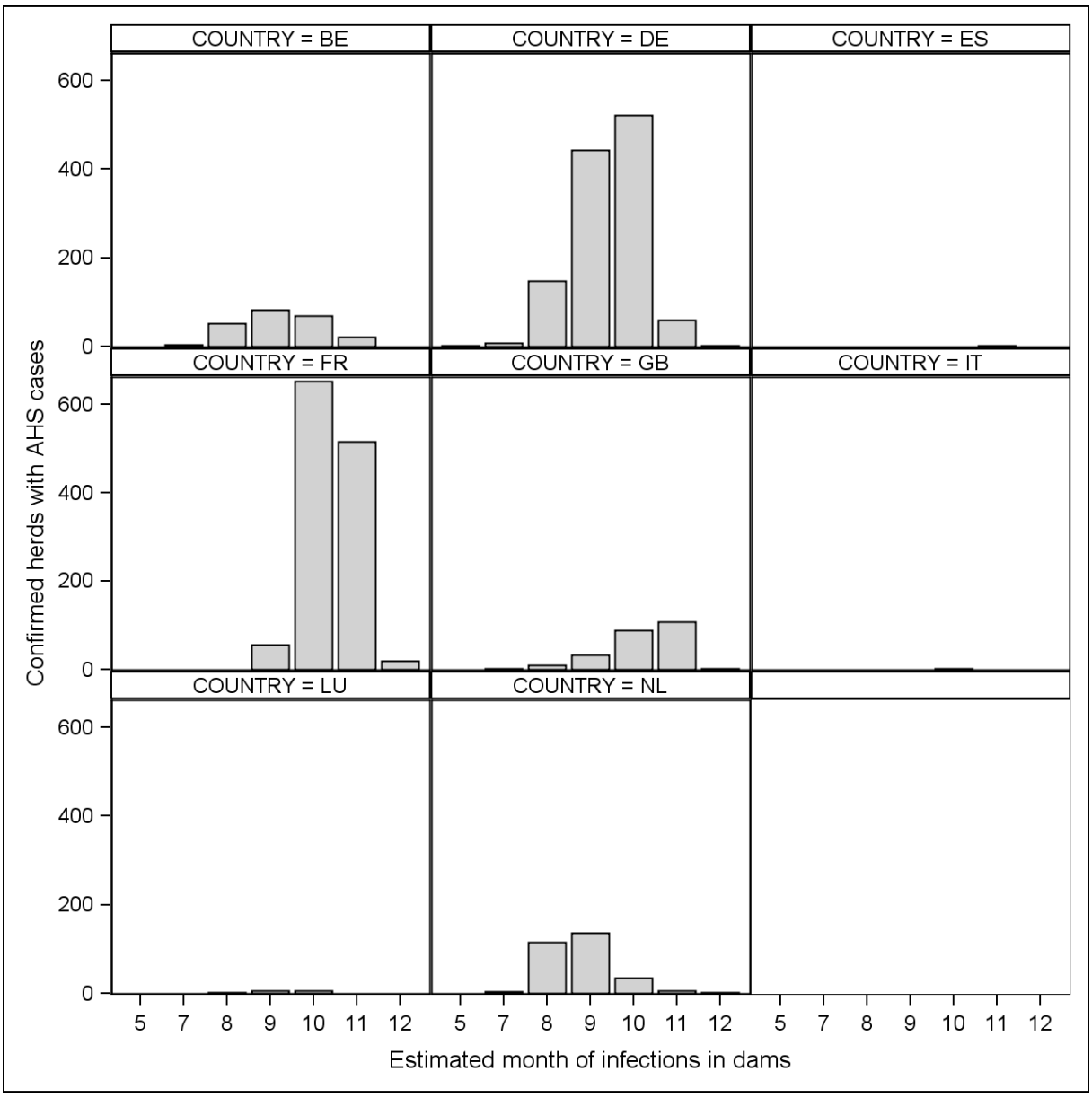



**Figure 4:** Estimation of months of viral circulation considering for sheep and goats a gestation period of 150 days and a midpoint vulnerable stage at 30 days and for cattle a gestation period of 280 days and a midpoint vulnerable stage at 90 days.

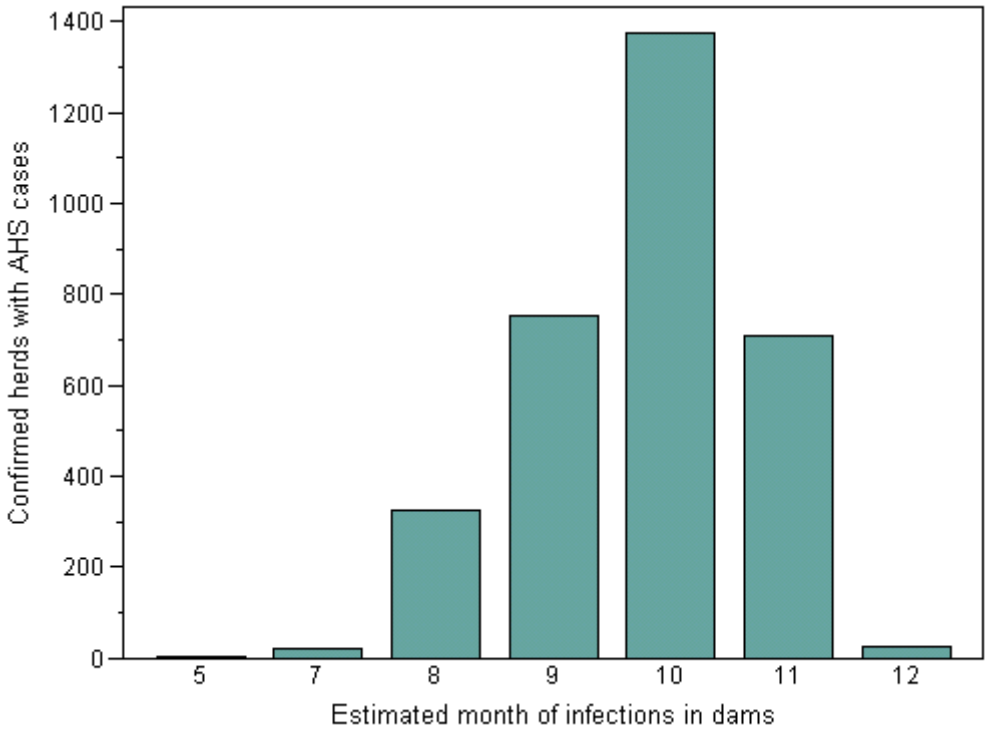



**Figure 5:** Estimation of months of viral circulation including all species and countries, with adjustment for gestation period and vulnerable stage

In Germany, there were eight confirmed acute cases in adults with viral RNA detection by RT-PCR, one reported in September, five in November and two in December 2011. Up till the date of data submission, no confirmed acute cases had been reported in adult animals in the year of 2012.

### 3.3. Spatial spread

Member States have also reported the Nomenclature of Territorial Units for Statistics (NUTS) codes of confirmed cases for cattle, sheep and goats but the spatial level of detail differs between countries. Data available per species is displayed in Figure 6 to 8. An analysis of the geographical / temporal distribution would not necessarily represent the spread of the infection since a lag between infection, detection and confirmation is likely to occur. The number of affected regions with confirmed SBV cases is highest for sheep, while fewer regions with confirmed SBV cases in goat herds are reported.

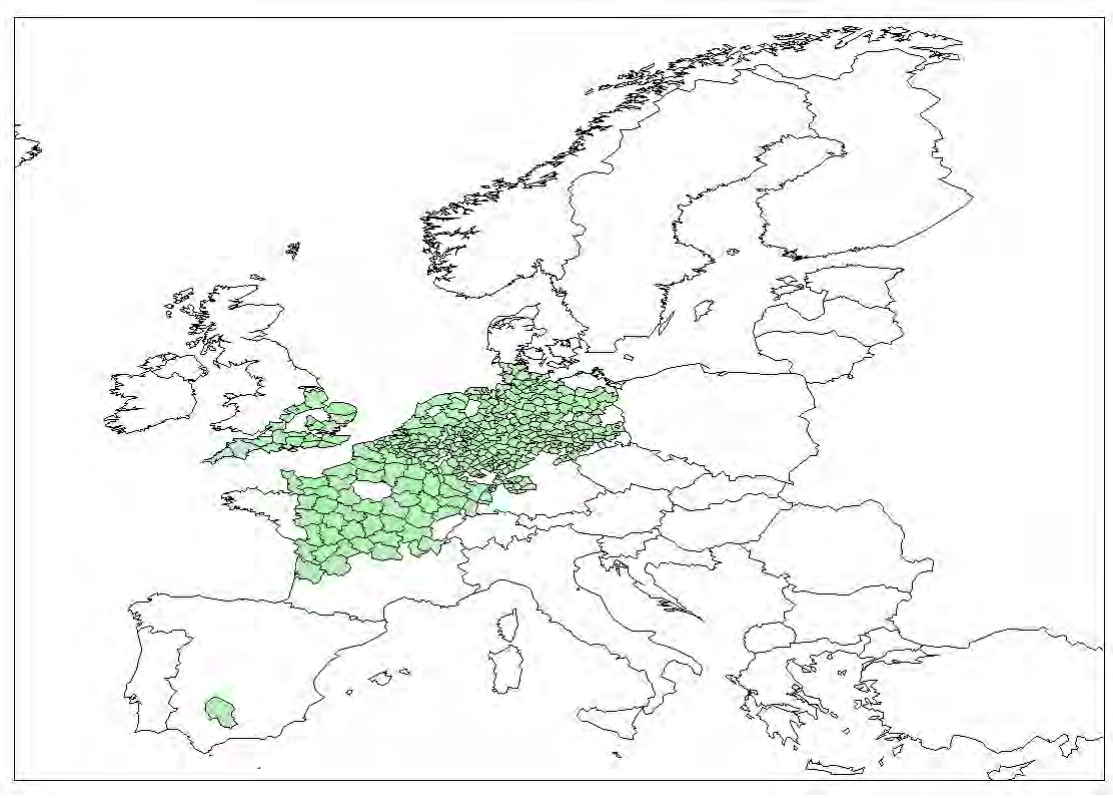


**Figure 6:** NUTS regions with at least one SBV confirmed herd - Sheep

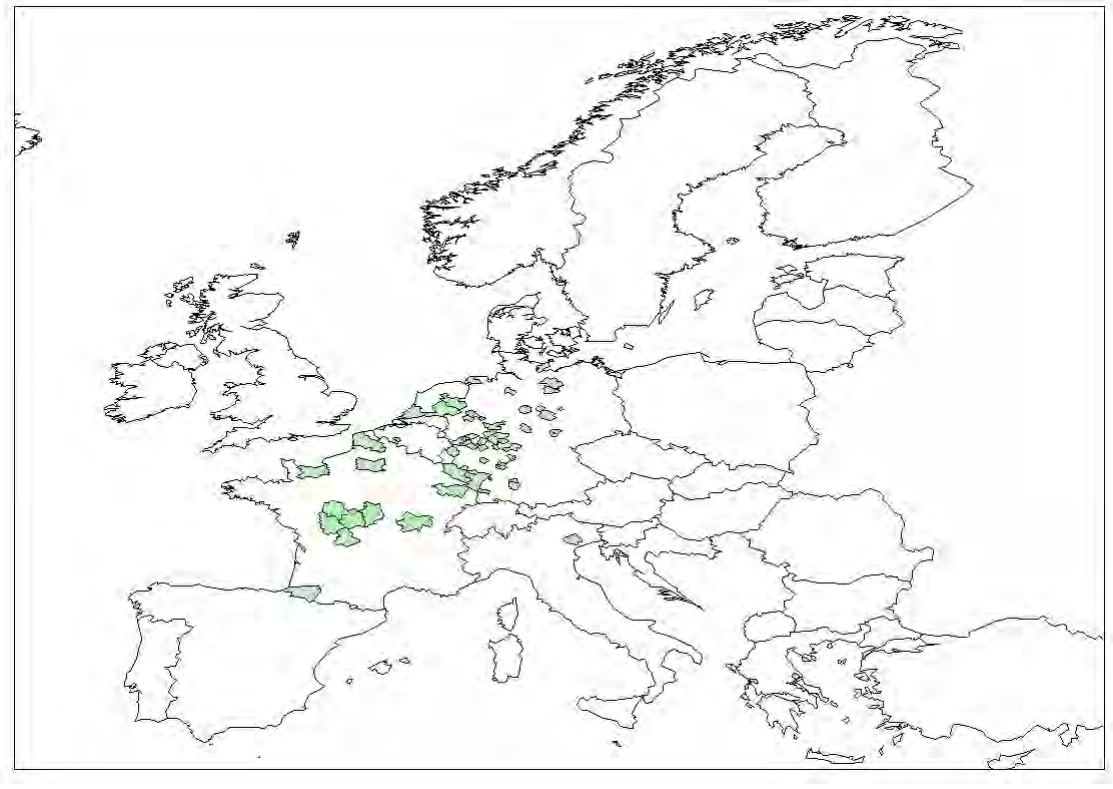


**Figure 7:** NUTS regions with at least one SBV confirmed herd - Goats

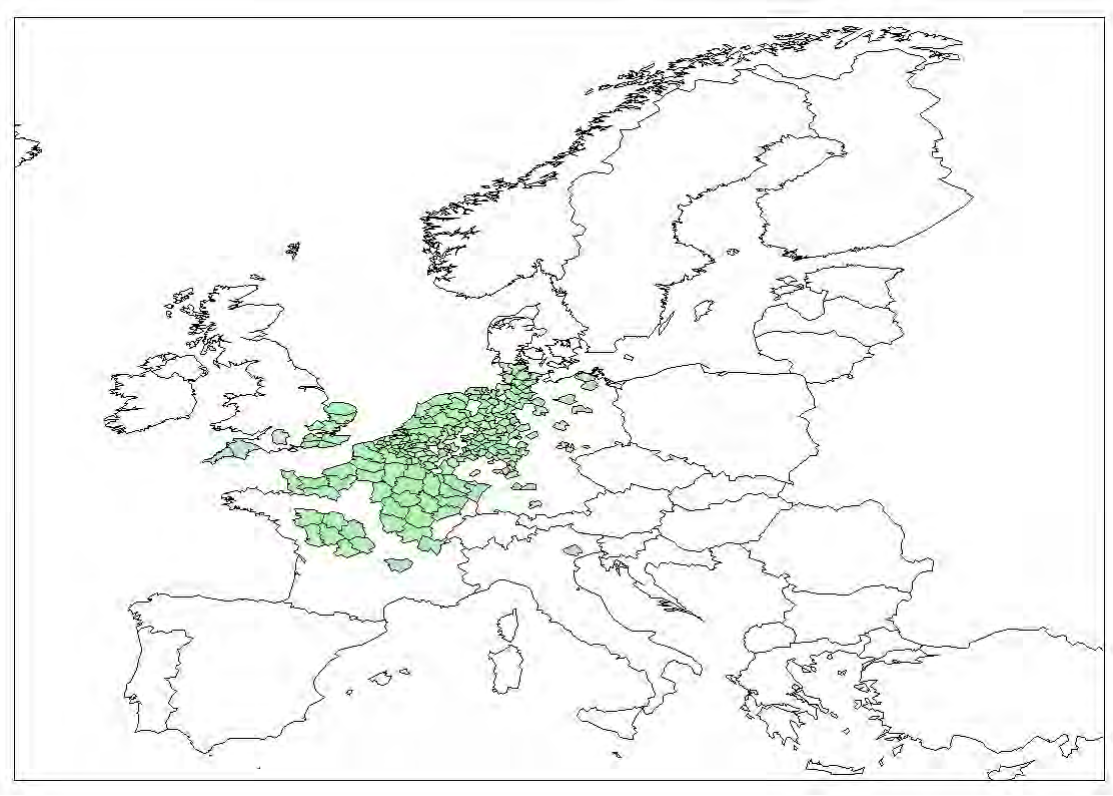


**Figure 8:** NUTS regions with at least one SBV confirmed herd - Cattle

### 3.4. Characterization of affected herds

The data collection also included variables for characterization of the affected herds, these were: species of animals, production type, number of animals per herd and animal movements during spring and summer 2011. Herd variables reported for countries with confirmed cases of SBV are listed in Table 4 and for countries with no confirmed SBV cases in Table 5.

**Table 4:** Available data regarding suspect/confirmed herds in SBV confirmed countries

| *Country* | *Ruminant* | *Production type* | *Reported Herds* | *Number of herds with known animal movements in spring summer 2011* | *Minimum number of animals in a herd* | *Maximum number of animals in a herd* |
|---|---|---|---|---|---|---|
| Belgium | Cattle | Meat production | 22 | 12 | 6 | 429 |
| | | Milk and meat production | 31 | 16 | 53 | 571 |
| | | Milk production | 21 | 12 | 79 | 202 |
| | Goats | Meat production | 1 | | 6 | 6 |
| | | Milk production | 1 | | 34 | 34 |
| | Sheep | Meat production | 155 | | 1 | 858 |
| France | Cattle | Meat production | 482 | | | 750 |
| | | Milk and meat production | 5 | | 60 | 175 |
| | | Milk production | 254 | | | 575 |
| | | Not classified | 170 | | | 353 |
| | Goats | Meat production | 13 | | | 300 |
| | | Milk and meat production | 6 | | | 430 |
| | | Milk production | 27 | | | 500 |
| | | Not classified | 14 | | | 252 |
| | Sheep | Meat production | 1191 | | | 1300 |
| | | Milk and meat production | 41 | | | 950 |
| | | Milk production | 7 | | | 436 |
| | | Not classified | 467 | | | 600 |
| Germany | Bison | Not classified | 1 | | 56 | 56 |
| | Cattle | Not classified | 313 | | 1 | 1185 |
| | Goats | Not classified | 45 | | 1 | 280 |
| | Sheep | Not classified | 842 | | 1 | 3523 |
| Italy | Cattle | Meat production | 2 | 0 | 1 | 13 |
| | | Milk and meat production | 1 | 1 | 230 | 230 |
| | | Milk production | 2 | 2 | 83 | 170 |
| | Goats | Milk production | 1 | 1 | 12 | 12 |
| | Sheep | Meat production | 1 | 0 | 1100 | 1100 |
| Luxembourg | Cattle | Meat production | 3 | 2 | 22 | 96 |
| | | Milk and meat production | 7 | 3 | 91 | 296 |
| | | Milk production | 5 | 2 | 86 | 132 |
| | Goats | Milk production | 1 | 1 | 1062 | 1062 |
| | Sheep | Meat production | 8 | 1 | 4 | 37 |

| *Country* | *Ruminant* | *Production type* | *Reported Herds* | *Number of herds with known animal movements in spring summer 2011* | *Minimum number of animals in a herd* | *Maximum number of animals in a herd* |
|---|---|---|---|---|---|---|
| Netherlands | Cattle | Not classified | 1111 | | | 979 |
| | Goats | Not classified | 36 | | | 433 |
| | Sheep | Not classified | 333 | | | 2289 |
| Spain | Cattle | Meat production | 2 | 1 | 73 | 86 |
| | | Milk production | 4 | 1 | 35 | 654 |
| | Goats | Milk production | 1 | 0 | 255 | 255 |
| | Sheep | Meat production | 4 | 3 | 80 | 811 |
| | | Milk and meat production | 3 | 2 | 70 | 158 |
| | | Not classified | 1 | 1 | 1035 | 1035 |
| United Kingdom | Cattle | Not classified | 67 | 0 | 1 | 800 |
| | Sheep | Meat production | 336 | 0 | 1 | 4000 |

**Table 5:** Available data regarding reported herds in countries without SBV confirmation

| *Country* | *Ruminant* | *Production type* | *Reported Herds* | *Number of herds with known animal movements in spring summer 2011* | *Minimum number of animals in a herd* | *Maximum number of animals in a herd* |
|---|---|---|---|---|---|---|
| Denmark | Cattle | Meat production | 1 | | 73 | 73 |
| | | Milk production | 11 | | 114 | 415 |
| | | Not classified | 1 | | 9 | 9 |
| | Goats | Meat production | 1 | | 5 | 5 |
| | | Milk production | 1 | | 4 | 4 |
| | Sheep | Meat production | 8 | | 11 | 450 |
| | | Not classified | 3 | | 7 | 13 |
| Ireland | Cattle | Not classified | 44 | | | |
| | Goats | Not classified | 2 | | | |
| | Sheep | Not classified | 10 | | | |
| Norway | Cattle | Milk production | 2 | | | |
| | Sheep | Meat production | 1 | | | |
| Switzerland | Goats | Milk production | 1 | | 76 | 76 |
| | Sheep | Meat production | 1 | | 51 | 51 |

### 3.5. Impact analysis

The data available only allows an impact assessment based upon the comparison between SBV confirmed herds and the total number of herds in each affected country by species.

The total number of SBV confirmed herds per species and country is presented in Figure 9. Information on the number of animals in confirmed herds has not been presented here due to incomplete information.

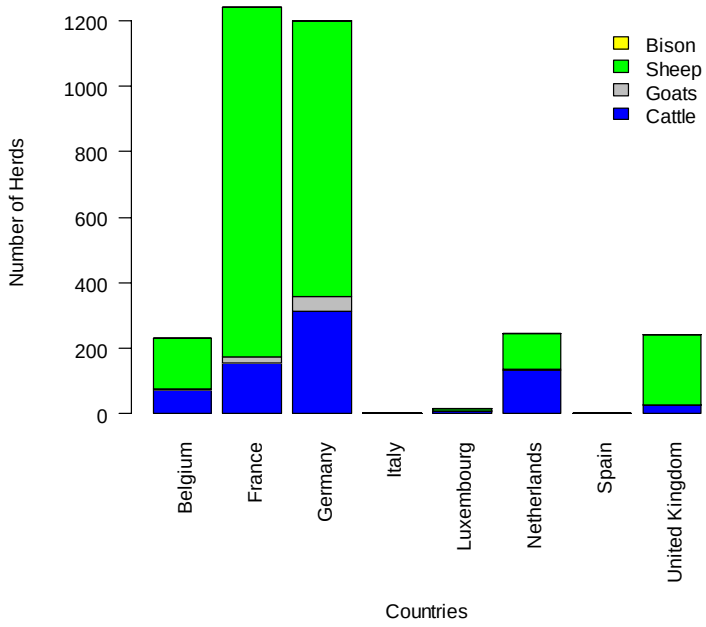



**Figure 9:** Total number of SBV confirmed herds by country and species.

The total number of sheep, goats and cattle herds in EU were obtained from Eurostat 2007 (http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database) and compared with the numbers displayed in Figure 9. The comparative bar plots are presented in Figure 10 to 12. For all affected countries, the number of SBV confirmed herds is low compared with the total number of herds. Nevertheless, these comparisons should be interpreted cautiously since underreporting or lack of confirmation may affect the ratio.

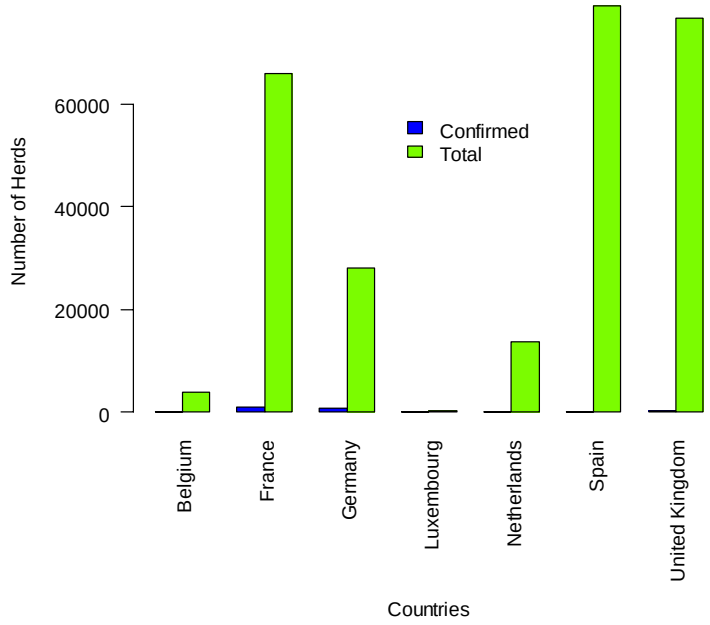



**Figure 10:** Total number of SBV confirmed sheep herds by country versus total number of sheep herds per country.

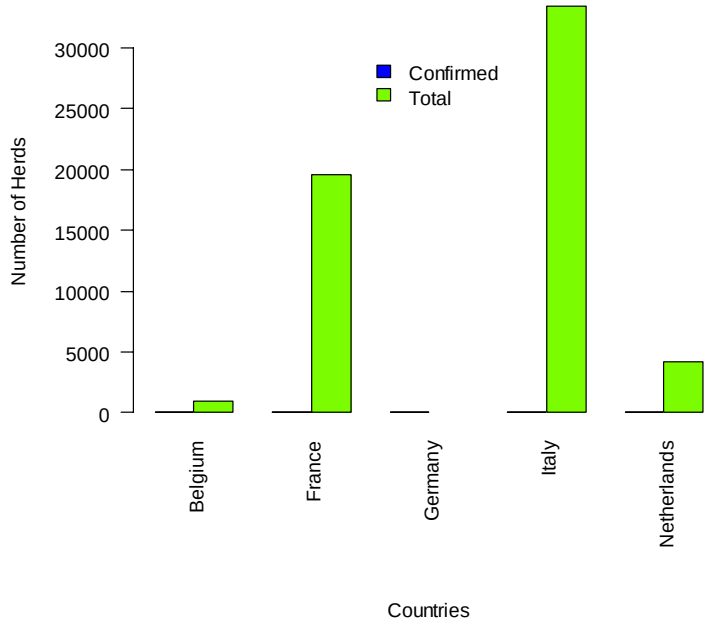



**Figure 11:** Total number of SBV confirmed goat herds by country versus total number of goats herds per country.

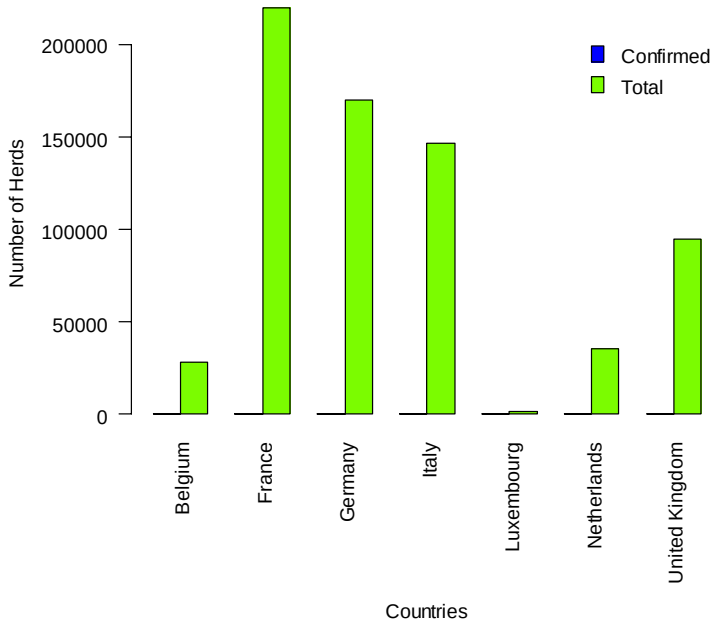



**Figure 12:** Total number of SBV confirmed cattle herds by country versus total number of cattle herds per country.

In order to further estimate the disease impact, data about the number of AHS cases, cases in adult animals, abortions, livebirths, pregnant animals, dystocia and stillbirths per herd during the reporting period were requested.

A summary of the data available for impact analysis is presented in Table 6. All affected Member States reported data on AHS cases but only Italy, Luxemburg and Spain, reported the number of AHS cases versus pregnant animals / females of breeding age by species. United Kingdom and Belgium provided some information regarding stillbirths and abortions respectively. Furthermore, only Belgium, Luxemburg and the United Kingdom reported herds where more than one AHS case was found.

**Table 6:** Availability of impact measures

| *Country* | *Number reported herds* | *Impact measure* | *% Herds no information* | *% Herds reporting more than one case* |
|---|---|---|---|---|
| Belgium | 231 | ABORTIONS | 0% | 25% |
| | | AHS | 0% | 2% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 96% | 4% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 98% | 2% |
| Denmark | 26 | ABORTIONS | 100% | 0% |
| | | AHS | 100% | 0% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |

| Country | Number reported herds | Impact measure | % Herds no information | % Herds reporting more than one case |
|---|---|---|---|---|
| | | STILLBIRTHS | 100% | 0% |
| France | 2677 | ABORTIONS | 100% | 0% |
| | | AHS | 0% | 0% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 100% | 0% |
| Germany | 1201 | ABORTIONS | 100% | 0% |
| | | AHS | 1% | 0% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 100% | 0% |
| Ireland | 56 | ABORTIONS | 100% | 0% |
| | | AHS | 100% | 0% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 100% | 0% |
| Italy | 7 | ABORTIONS | 0% | 14% |
| | | AHS | 0% | 0% |
| | | DYSTOCIA | 0% | 43% |
| | | LIVEBIRTHS | 0% | 86% |
| | | PREGNANT | 0% | 86% |
| | | STILLBIRTHS | 0% | 29% |
| Luxembourg | 24 | ABORTIONS | 4% | 13% |
| | | AHS | 0% | 21% |
| | | DYSTOCIA | 4% | 38% |
| | | LIVEBIRTHS | 4% | 88% |
| | | PREGNANT | 4% | 92% |
| | | STILLBIRTHS | 4% | 54% |
| Netherlands | 1480 | ABORTIONS | 100% | 0% |
| | | AHS | 0% | 0% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 100% | 0% |

| Country | Number reported herds | Impact measure | % Herds no information | % Herds reporting more than one case |
|---|---|---|---|---|
| Norway | 3 | ABORTIONS | 100% | 0% |
| | | AHS | 0% | 0% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 67% | 0% |
| Spain | 15 | ABORTIONS | 0% | 73% |
| | | AHS | 0% | 60% |
| | | DYSTOCIA | 7% | 53% |
| | | LIVEBIRTHS | 13% | 80% |
| | | PREGNANT | 33% | 67% |
| | | STILLBIRTHS | 7% | 60% |
| Switzerland | 2 | ABORTIONS | 100% | 0% |
| | | AHS | 0% | 0% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 100% | 0% |
| United Kingdom | 403 | ABORTIONS | 100% | 0% |
| | | AHS | 0% | 33% |
| | | DYSTOCIA | 100% | 0% |
| | | LIVEBIRTHS | 100% | 0% |
| | | PREGNANT | 100% | 0% |
| | | STILLBIRTHS | 0% | 33% |

The last column of Table 6 regarding the percentage of herds reporting more than one case is an indication that Member States are not currently following up or reporting updates for confirmed herds once they have been detected.

## 4. Recommendations

The data provided allows an understanding of the temporal and geographical distribution of the SBV outbreak. In order to fully characterise the outbreak and the epidemiology of SBV in Europe, efforts to obtain comparable data on the number of herds tested, the number of newborns and foetuses within a herd with arthrogryposis hydranencephaly syndrome (AHS) type clinical signs and the number of animals within the herd tested by either direct or indirect laboratory methods are required. This could be achieved by following up selected herds or by performing a survey to properly evaluate the impact and magnitude of the spread of SBV infection. As more data becomes available the impact assessment for SBV (in particular within herd and local impact) could be subject to change.

# APPENDIX

## A. SBV DATA REPORTING GUIDELINES

Notification of "Schmallenberg" virus (SBV) at a European level is currently not obligatory but there is a need for harmonised case definitions and quantification of epidemiological parameters to allow for assessing impact and spread of this emerging disease in animals. The reporting guideline may be amended, as new epidemiological evidence and testing methods become available. Member States (MS) affected by SBV are kindly requested to enter the data required under the "MINIMUM DATASET" section of this document. The data in the "EXTENDED DATASET" section can be provided in order to facilitate the understanding of the epidemiology of this disease, but is not strictly necessary.

### MINIMUM DATASET – HERD/FLOCK LEVEL

The herd/flock level dataset is based upon data currently being collected within the affected member state. This information should be reported every two weeks for all affected Member States.

#### Objectives

This dataset will be used in the epidemiological updates published by EFSA. This dataset is designed for case finding. The dataset will be used to obtain information on the spread of SBV in Europe both temporally (Date of first suspicious report) and spatially (Country/Region of holding). The information will also be used to investigate the possible impact of SBV in terms of observed birth outcomes and proportion of Arthrogryposis Hydranencephaly Syndrome (AHS) cases observed in pregnant animals from 1 August 2011 to date of data transmission.

#### Plan of analysis

Descriptive statistics will be provided on the number of AHS cases, number of suspect / confirmed cases and other birth outcomes by species at country and EU level. Temporal evaluation of spread based on date of first suspicious report by species. Spatial evaluation of spread by region based on suspicious herds and confirmed herds. Within herd impact analysis considering reported AHS cases versus pregnant animals / females of breeding age by species, holding type and region.

**Population:** The virus has been detected in cattle, sheep, goats and bison. The data should be reported for cattle, sheep goats, other ruminant animals and closely related species.

**Reporting period:** First symptoms were reported in cattle in Germany in summer and early autumn 2011. The reporting period is therefore defined as 1 August 2011 to the date of transmission of data. A full epidemiological report with the total number of observations starting from 1 August 2011 should be included in each data transmission. When an updated report is received from a country, it replaces previously submitted reports by that country.

**Epidemiological unit:** is the herd/flock, all ruminants of one species on a holding are considered to represent a herd/flock.

#### Case definitions:

Foetuses and neonates

Suspect case: Arthrogryposis hydranencephaly syndrome (AHS) in ruminants (stillbirths, premature births, mummified fetuses, and dysfunctions or deformities of foetuses or neonates with two or more of the following: arthrogryposis, hydranencephaly, ataxia, paralysed limbs, muscle atrophy, joint

malformations, torticollis, kyphosis, scoliosis, brachygnatia inferior, behavioural abnormalities and blindness).

Confirmed case: Following suspicion, a confirmation of viral infection by RT-PCR, virus isolation (or other method of pathogen direct or indirect detection when available).

Adult animals

Suspicious case: Ruminants with transient fever, diarrhoea, and reduced milk production (that is not attributed to a known cause)

Confirmed case: Confirmation of viral infection by RT-PCR, virus isolation, ELISA, VNT (or other method of pathogen or indirect detection when available).

Herd case definition

Any herd with one or more suspect or confirmed case.

**Required information:**

Unique herd identifier – Provide a code to uniquely identify the herd/flock within the reporting country. The code should be designed to ensure the individual holding remains anonymous and should be retained in each data submission (e.g IT000001, IT000002).

Location – report the geographical location of the holding
Countries should be encoded using the standard ISO-3166-1-alpha-2 coding system. Described in the COUNTRY catalogue.

Additional geographical detail about the region where the holding is located can be specified using the Nomenclature of territorial units for statistics (NUTS) code (as described in NUTS catalogue). http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

The two catalogues (COUNTRY, NUTS) are published on the EFSA website http://www.efsa.europa.eu/en/efsajournal/pub/1457.htm in the standard sample description excel file for download.

Animal species – report the code and the text describing species of animal in the herd/flock selected from the catalogue below

Species catalogue

| ***code*** | ***name*** |
|---|---|
| 04421 | Alpaca (*Vicugna pacos)* |
| 9281 | Alpine chamois (*Rupicapra* spp.) |
| 11681 | Barbary sheep (*Ammotragus lervia*) |
| 1601 | Bison (*Bison bison*) |
| 14001 | Buffalos (*Syncerus caffer*) |
| 81 | Camels (*Camelus* spp.*)* |
| 6581 | Cattle (*Bos taurus*) |
| 1401 | Deer (*Capreolus* spp., *Cervus* spp., *Dama* spp.*)* |
| 6761 | Goats (*Capra aegagrus*) |
| 14081 | Lamas (*Lama glama*) |

| | |
|---|---|
| 11501 | Mouflons (*Ovis musimon*) |
| 22101 | Mountain goats (*Oreamnos americanus*) |
| 281 | Reindeers (*Rangifer tarandus*) |
| 10061 | Sheep (*Ovis aries*) |
| 2861 | Solipeds, domestic (*Equidae*) |
| 6821 | Water buffalos (*Bubalus* spp.) |
| 00000 | Other |

Purpose of reproduction – indicate whether the animals are reared for milk, meat, mixed or other production.

Animal Movements – indicate whether new animals were introduced to the holding in spring or summer of 2011 (March – September).

Date of first suspicious report – report the year, month and day of the first report to the veterinary services of a case according to the case definitions above within the herd/flock.

Herd statistics – report the number of animals in the herd/flock for each of the numerical elements in the table below. For each of the numerical elements where information has been collected and there are no animals within that category report 0, where no information has been collected report NULL.

Totals should be reported for the full reporting period from 1 August 2011 to the data transmission date, with the exception of “animals” and “females”. For “animals” and “females” report the number of animals either on the date of the first suspicious report or at the end of 2011. The time point for reporting the denominator information should be based on the ease of obtaining this information and the time point used should be specified in the “denominator” element.

Herd catalogue

| *Element name* | *Definition* | *Data type* | *Mandatory* | *Catalogue* |
|---|---|---|---|---|
| herdID | Unique identifier for herd/flock | String(50) | Y | |
| country | Country where the holding is located | String(2) | Y | COUNTRY |
| NUTScode | Code for region where holding is located using Nomenclature for Territorial Units for Statistics | String(5) | Y | NUTS |
| NUTSregion | Text for region where holding is located using | String(250) | | |
| speciesCode | Code for species of animal in herd/flock | String(5) | Y | SPECIES |
| speciesText | Text to describe the species of animal in the herd/flock | String(250) | | |
| reproduction | Reproduction for production of milk, meat, mixed or other | String(5) | Y | MEAT, MILK, MIXED, OTHER |
| animalMove | Indicate if new animals were introduced to the holding in spring or summer 2011 | String(1) | Y | Y/N/U |
| firstReportY | Year of first suspicious report in herd/flock | integer (4) | Y | |
| firstReportM | Month of first suspicious report in herd/flock | integer (2) | Y | |
| firstReportD | Day of first suspicious report in herd/flock | integer (2) | Y | |
| denominator | Indicate if the number of animals and number of females is for the end of 2011 or the date of first suspicious report | String(4) | Y | ENDY, SUSP |
| animals | Number of adult animals in herd/flock (male | Integer(6) | Y | |

| | | | |
|---|---|---|---|
| | and female; greater than 12 months for cattle, greater than 6 months for sheep and goats) | | |
| females | Number adult females in herd/flock (greater than 12 months for cattle, greater than 6 months for sheep and goats) | Integer(6) | Y |
| pregnant | Number of pregnant animals in herd/flock from 1 Aug 2011 to date of data transmission | Integer(6) | Y |
| liveBirths | Number of live births in herd/flock from 1 Aug 2011 to date of data transmission | Integer(6) | Y |
| stillBirths | Number of still births in herd/flock from 1 Aug 2011 to date of data transmission | Integer(6) | Y |
| abortions | Number of abortions in herd/flock from 1 Aug 2011 to date of data transmission | Integer(6) | Y |
| dystocia | Number of dystocic births in herd/flock from 1 Aug 2011 to date of data transmission | Integer(6) | |
| ahs | Number of pregnancies resulting in arthrogryposis hydranencephaly syndrome from 1 Aug 2011 to date of data transmission | Integer(6) | Y |
| offspringTestPD | Number of foetuses and neonates tested for SBV by pathogen detection methods in herd/flock | Integer(6) | Y |
| offspringTestPDPos | Number of positive foetuses and neonates tested for SBV by pathogen detection methods in herd/flock | Integer(6) | Y |
| offspringTestSero | Number of foetuses and neonates tested for SBV by indirect detection methods in herd/flock | Integer(6) | |
| offspringTestSeroPos | Number of positive foetuses and neonates tested for SBV by indirect detection methods in herd/flock | Integer(6) | |
| symptomatic | Number of symptomatic adult animals in herd/flock (fever, diarrhoea, anorexia, losses in milk production) | Integer(6) | |
| adultsTestPD | Number of adult animals tested for SBV by pathogen detection methods in herd/flock | Integer(6) | Y |
| adultsTestPDPos | Number of positive adult animals tested for SBV by pathogen detection methods in herd/flock | Integer(6) | Y |
| adultsTestSero | Number of adult animals tested for SBV by indirect detection methods in herd/flock | Integer(6) | |
| adultsTestSeroPos | Number of positive adult animals tested for SBV by indirect detection methods in herd/flock | Integer(6) | |

## EXTENDED DATASET

This dataset is designed for hypothesis generation and to facilitate future epidemiological research. It is expected that information at this level would only be obtained from a limited number of holdings, selected for specific epidemiological studies. Where these studies are carried out the collection of these data items are recommended to allow for a better understanding of the epidemiology of SBV in Europe. It is also recommended to collect the minimum dataset for years prior to 2011 in order to obtain baseline abortion, still birth and malformation rates.

### Objectives

This dataset will be used in the final report published by EFSA. The dataset will be used to obtain information on within herd spread, morbidity, case fatality rate, risk period for infection during pregnancy, role of transplacental transmission and to generate hypothesises about plausible risk factors

### Plan of analysis

Descriptive statistics will be provided in terms of number of AHS cases, number of confirmed cases and other birth outcomes within herd, by species and holding type. Temporal evaluation of within herd spread based on the date of birth of foetuses and neonates testing positive for SBV. Within herd impact analysis considering reported AHS symptoms, disease status of dams and offspring. The extended dataset will allow for exploration of the possible links between cases and, most likely, the period during pregnancy when infection occurred.

**Epidemiological unit:** Foetuses, neonates, dams and barren animals from a herd/flock meeting the case definition for the minimum level dataset.

### Foetuses and neonates

| *Element name* | *Definition* | *Data Type* | *Priority data* | *Controlled terminology* |
|---|---|---|---|---|
| herdID | Unique identifier for herd/flock for the reporting country | string (50) | Y | |
| country | Country where the holding is located | String(2) | Y | COUNTRY |
| NUTScode | Code for region where holding is located using Nomenclature for Territorial Units for Statistics | String(5) | Y | NUTS |
| NUTSregion | Code Text for region where holding is located using Nomenclature for Territorial Units for Statistics | String(250) | | |
| speciesCode | Code for species of animal | String(5) | Y | SPECIES |
| speciesText | Text to describe the species of animal | String(250) | | |
| animalMove | Indicate if new animals were introduced to the holding in spring or summer 2011 | String(1) | Y | Y/N/U |
| animalID | Unique identifier for animal within the herd | string (50) | Y | |
| motherID | Unique identifier for the dam within the herd to link with the dams dataset | string (50) | Y | |
| birthY | Year of partus | integer (4) | Y | |
| birthM | Month of partus | integer (2) | Y | |

| | | | | |
|---|---|---|---|---|
| birthD | Day of partus | integer (2) | | |
| sex | Sex of animal | string (1) | | M/F/U |
| ahs | Indicate if the animal has arthrogryposis hydranencephaly syndrome | string (1) | Y | Y/N/U |
| arthrogryposis | Indicate if the animal has arthrogryposis | string (1) | Y | Y/N/U |
| hydranencephaly | Indicate if the animal has hydranencephaly | string (1) | Y | Y/N/U |
| ataxia | Indicate if the animal has ataxia or paralysed limbs | string (1) | Y | Y/N/U |
| spinalDefect | Indicate if the animal has torticollis, kyphosis, scoliosis | string (1) | Y | Y/N/U |
| brachygnatia | Indicate if the animal has brachygnatia | string (1) | Y | Y/N/U |
| neuroSigns | Indicate if the animal has neurological signs including behavioural abnormalities and blindness | string (1) | Y | Y/N/U |
| hypoCerebrum | Indicate if the animal has hypoplasia cerebrum | string (1) | Y | Y/N/U |
| hypoCerebellar | Indicate if the animal has hypoplasia cerebellar | string (1) | Y | Y/N/U |
| hypoSpinal | Indicate if the animal has hypoplasia spinal cord | string (1) | Y | Y/N/U |
| died | Indicate if the animal died | string (1) | Y | Y/N/U |
| sampleID | Identifier used for sample in testing laboratory | string (50) | Y | |
| labID | Identifier for laboratory performing test | string (50) | | |
| sampleY | Year of sample | integer (4) | Y | |
| sampleM | Month of sample | integer (2) | Y | |
| sampleD | Day of sample | integer (2) | | |
| tissueType | Code for type of tissue sampled | string(5) | | SMPRT |
| testType | Code for type of test | string(5) | Y | PCR/IFAT/ELISA/NT |
| result | Result of test | string(3) | Y | POS/NEG/EQU |

**Previously pregnant dams and barren animals**

| *Element name* | *Definition* | *Data Type* | *Priority data* | *Controlled terminology* |
|---|---|---|---|---|
| herdID | Unique identifier for herd for the holding | string (50) | Y | |
| country | Country where the holding is located | String(2) | Y | COUNTRY |
| NUTScode | Code for region where holding is located using Nomenclature for Territorial Units for Statistics | String(5) | Y | |
| NUTSregion | Text for region where holding is located using | String(250) | | NUTS |
| speciesCode | Code for species of animal | String(5) | Y | SPECIES |
| speciesText | Text to describe the species of animal | String(250) | | |
| reproduction | Reproduction for production of milk, meat, mixed or other | String(5) | Y | MEAT, MILK, MIXED, OTHER |
| animalMove | Indicate if new animals were introduced to the holding in spring or summer 2011 | String(1) | Y | Y/N/U |
| animalID | Unique identifier for animal within the herd | string (50) | Y | |

| | | | | |
|---|---|---|---|---|
| offspringID | Unique identifier for the offspring to link with the foetuses and neonates table | string (50) | | |
| indoorDay | Indicate if the animal was kept indoors during the day during gestation | string(1) | Y | Y/N/U |
| indoorNight | Indicate if the animal was kept indoors during the night during gestation | string(1) | Y | Y/N/U |
| insecticide | Indicate is the animal was treated with “pour on” insecticides/repellents | string(1) | Y | Y/N/U |
| birthY | Year of birth | integer (4) | Y | |
| sex | Sex of animal | string (1) | | M/F/U |
| fever | Indicate if the animal had fever | string (1) | Y | Y/N/U |
| diarrhoea | Indicate if the animal had diarrhoea | string (1) | Y | Y/N/U |
| neuroSigns | Indicate if the animal had neurological signs | string (1) | Y | Y/N/U |
| anorexia | Indicate if the animal had anorexia | string (1) | Y | Y/N/U |
| milkDrop | Indicate if the animal had a drop in milk production | string (1) | Y | Y/N/U |
| milkLoss | Percentage milk loss (if observed) | double | | |
| durMilkLoss | Duration of milk loss (if observed) in days | integer (6) | | |
| durSymptoms | Duration of symptoms (if observed) in days | | | |
| onsetY | Year of onset of symptoms (if observed) | integer (4) | | |
| onsetM | Month of onset symptoms (if observed) | integer (2) | | |
| onsetD | Day of onset symptoms (if observed) | integer (2) | | |
| matedY | Year of mating/insemination | integer (4) | Y | |
| matedM | Month of mating/insemination | integer (2) | Y | |
| matedD | Day of mating/insemination | integer (2) | | |
| ahs | Indicate if the animal had a pregnancy resulting in arthrogyrposis hydranencephaly syndrome | string (1) | Y | Y/N/U |
| stillBirth | Indicate if the animal had a still birth | string (1) | Y | Y/N/U |
| abortion | Indicate if the animal had an abortion | string (1) | Y | Y/N/U |
| returnToService | Indicate if the animal returned to service | string (1) | Y | Y/N/U |
| dystocia | Indicate if the animal had a dystocic birth | string (1) | Y | Y/N/U |
| liveBirth | Indicate if the animal had live offspring | string (1) | Y | Y/N/U |
| offspring | Number of offspring (where live birth occurred) from 1 August 2011 | integer (6) | | |
| gestation | Number of days gestation | integer (6) | | |
| died | Indicate if the animal died on holding | string (1) | Y | Y/N/U |

| | | | | |
|---|---|---|---|---|
| sampleID | Identifier used for sample in testing laboratory | string (50) | Y | |
| labID | Identifier for laboratory performing test | string (50) | | |
| sampleY | Year of sample | integer (4) | Y | |
| sampleM | Month of sample | integer (2) | Y | |
| sampleD | Day of sample | integer (2) | | |
| tissueType | Code for type of tissue sampled | string(5) | | SMPRT |
| testType | Code for type of test | string(5) | Y | PCR/IFAT/ELISA/NT |
| result | Result of test | string(3) | Y | POS/NEG/EQU |

**Catalogue SMPRT**

| *code* | *name* |
|---|---|
| C0113 | MILK OR MILK COMPONENT |
| C0185 | BLOOD |
| C0199 | BRAIN |
| CZ943 | PERITONEAL FLUID |
| CZ801 | FAECES |
| CZ861 | FOETUS/STILL BIRTH |
| C0191 | SPLEEN |

**Samples and Laboratory Methods**

**Pathogen detection**: Pathogen detection is done by real-time RT-PCR or virus isolation.
Samples for pathogen detection in acute infection: serum or EDTA blood samples when clinical signs are observed (fever, drop in milk yield, diarrhoea).
Samples for pathogen detection in foetuses, abortions, stillbirths and malformed ruminants: brain plus supplementary samples of spleen and blood.

**Indirect detection**: Antibody detection by indirect immuno-fluorescence, virus neutralization test or other serological tests as they become available.
Samples for indirect detection: serum samples are recommended (EDTA blood samples are less suitable for the neutralization test).

## GLOSSARY

| | |
|---|---|
| arthrogryposis | also called multiple congenital contracture, characterized by bent limbs and joint contractures present at birth, fixing joints in abnormal positions and restricting their movement. |
| case definition | defines a case in surveillance. The case definition can be based on, for example, clinical signs, diagnostic testing, and animal or herd characteristics |
| herd | group of animals belonging to the same species |
| hydranencephaly | abnormal development of foetal nervous system, including loss of cerebral cortical tissue |
| sensitivity | the proportion of infected animals that are correctly identified as positive based on specified diagnostic criteria. The higher sensitivity of a diagnostic test, the lower the number of false negatives (infected animals incorrectly identified as negative for an infection). |
| serosurveillance | serological surveillance for presence of antibodies to a pathogen in a unit, can identify previous exposure of a population to a pathogen. |
| specificity | the proportion of non-infected animals that are correctly identified as negative based on specified diagnostic criteria. The higher specificity of a diagnostic test, the lower the number of false positives (non-infected animals incorrectly identified as positive for an infection). |
| torticollis | a lateral flexion of the neck (cervical spine) |
| vector | organism that carries and transmits an infectious pathogen from one host to another |

## ABBREVIATIONS

| | |
|---|---|
| AHS | arthrogryposis hydranencephaly syndrome |
| DCF | Data Collection Framework |
| DG SANCO | Direction générale de la santé et des consommateurs (Directorate-General for Health and Consumers) |
| EFSA | European Food Safety Authority |
| EFTA | European Free Trade Association |
| EU | European Union |
| MS | Member State |
| NUTS | Nomenclature of territorial units for statistics |
| OIE | World Organisation for Animal Health |

| | |
|---|---|
| PCR | polymerase chain reaction |
| RT-PCR | reverse transcriptase PCR |
| SBV | Schmallenberg virus |
| SCoFCAH | Standing Committee on the Food Chain and Animal Health |