

TECHNICAL REPORT

"Schmallenberg" virus: analysis of the epidemiological data ¹

(November 2012)

European Food Safety Authority^{2, 3}

European Food Safety Authority (EFSA), Parma, Italy

SUMMARY

Following the request from the European Commission for EFSA to continue to collect data and provide updates of the epidemiological situation of Schmallenberg virus (SBV) in the EU. This epidemiological report presents the analysis of the data received during the reporting period, updating the previously published report on the analysis of the epidemiological data and preliminary assessment of impact.

The analysis intends to give an overview of the SBV situation after 1 year (reporting period from 1 August 2011 till 31 July 2012) together with an update of newly affected herds.

All affected countries have reported the number of confirmed herds following viral detection by PCR, virus neutralisation test or serological confirmation. An increased number of test results is based on serological detection of SBV antibodies and this can only be used as evidence of infection but provide no information on clinical disease or occurrence of new cases. No new cases were reported from Spain or Belgium.

In August 2012, 294 herds were reported with AHS symptoms in cattle. In September and October the number of herds with AHS symptoms decreased however acute cases in adults (adult animals where clinical signs were observed and SBV diagnosis confirmed) were reported in August, September and October. It is important to note that the number of countries reporting acute adult cases is limited and it is likely that adult cases are not diagnosed considering the transitory and non specific nature of the clinical signs observed. An increase of the number of AHS cases is likely to occur in the coming months resulting of infection of previously unexposed animals in the susceptible period of gestation.

¹ On the request of European Commission, Question No. EFSA-Q-2012-00825, approved on 15 November, 2012.

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³ EFSA wishes to thank: Ana Afonso, Franck Berthe, José Cortiñas Abrahantes, Jane Richardson, Didier Verloo, Andrea Bau (EFSA) for the preparatory work on this output; and to all reporting officers: Ingeborg Mertens (Federal Agency for the Safety of the Food Chain, Belgium), Heinzpeter Schwermer (Federal Veterinary Office, Switzerland), Apostolos Mazieri (Cyprus Veterinary Services Cyprus), Postfach, Switzerland), Franz Conraths (Federal Research Institute for Animal Health, Germany), Anna Huda (Danish Veterinary and Food Administration, Denmark), Ulla Rikula (Finnish Food Safety Authority, Finland), (Morgane Dominguez (ANSES, France), Bernard Bradshaw (Central Veterinary Research Laboratory, Department of Agriculture and the Marine Laboratories, Ireland), Pasquale Simonetti (Ministry of Health – DG animal health and veterinary medicinal products, Italy), Carlo Dahm (Luxembourg), Marcel Spierenburg (Netherlands Food and Consumer Product Safety Authority, Netherlands), Fredrik Andersen (The Norwegian Food Safety Authorities, Norway), Krzysztof Smietanka (National Veterinary Research Institute, Poland), Kristina Mieziowska (Swedish Board of Agriculture, Sweden), Luis J. Romero González (Subdirección General de Sanidad e Higiene Animal y Trazabilidad – Magrama, Spain) and Helen Roberts (AHVLA, United Kingdom) for providing the data presented.

The temporal analysis was performed for SBV confirmed herd reports. It can be seen that the SBV has continued to circulate within Europe with newly affected herds being reported in October 2012.

At the time of publication of the last EFSA epidemiological update in May 8 member states (Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Spain and United Kingdom) had reported confirmed cases of SBV. During the summer SBV confirmed cases were reported in new countries; including Denmark, Finland, Poland, Sweden and Switzerland, and in new regions in France, United Kingdom and Germany. Other epidemiology reporting services indicate that SBV has also been detected in Austria and Ireland. SBV is continuing to spread to new areas of Europe, and it is likely that new SBV cases will be observed in Southern and Eastern regions of Europe in 2013.

The data available only allows a between herd impact assessment based upon the comparison between SBV confirmed herds and the total number of herds in each affected region by species. For all affected countries, the number of SBV confirmed herds is low compared with the total number of herds. The maximum proportion of confirmed sheep herds per region is 6.6% and 4% for cattle herds. Nevertheless, these comparisons should be interpreted cautiously since under reporting or lack of confirmation may affect the ratio. No information is available to assess within herd impact.

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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 was named "Schmallenberg" virus (SBV) and during Spring 2012 several EU countries notified cases of SBV in domestic ruminants.

EFSA assisted the Commission and the Member States by preparing of reports on the epidemiological situation based on the data gathered by the Member States.

The Commission and the Member States recognise the importance of transparency for the EU. The Commission would like EFSA to provide regular updates, becoming *de facto* the showcase for the entire world on the evolution of the epidemiological situation on SBV in the EU. Therefore, in the context of Article 31 of Regulation (EC) No 178/2002, EFSA was requested to continue providing assistance to the Commission.

TERMS OF REFERENCE AS PROVIDED BY THE EUROPEAN COMMISSION

EFSA is requested to deliver:

1. Continue to collect data through the EFSA Data Collection Framework (DCF) from Member States in a structured manner in coordination with DG SANCO. This should allow for updates of EFSA reports (three times per year) on the description of the epidemiological situation of SBV in the EU. This needs to be done keeping the possibility to use it for further risk assessment. A first update should be produced by 15 November 2012. A second report on 31/05/2013 and a third on 01/12/2013.

2. An update of the report on the overall assessment of the impact of this infection on animal health, animal production and animal welfare. The intention would be, in particular, to fill the data gaps identified in the EFS A May 2012 report and to allow for completing the assessment of the impact, specially the within-herd impact. The report should also take into account the latest scientific findings on SBV, specially the studies co-financed by the EU1, providing a comprehensive report on the state of art of the scientific knowledge. Notably this should track the research initiatives going on in several Member States, with a note of attention for the new data to be provided on the traded commodities and their risk of transmitting the infection. A report should be produced by 1 December 2013.

SCOPE

Guidance on data to be collected in Member States was provided in a previous EFSA report (EFSA 2012⁴) in order to optimise harmonisation and ensure coordination. The guidance was subsequently updated in August 2012. The guidance includes harmonised case definitions for both suspect and confirmed adult and newborn animals as well as a definition for an affected herd. Reporting guidelines for a minimum dataset at herd/flock level were also provided. Such data is currently being collected within the affected Member States. In this report, an analysis of the epidemiological data made available is presented in response to term of reference number 1.

The analysis intends also to give an overview of the SBV situation after 1 year (reporting period from the 1 August 2011 till the 31 July 2012) together with an update of newly affected herds, herds where acute adult cases have been observed and previously affected herds reporting new AHS cases (reporting period from the 1 August 2012 till the 30 October 2012).

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

This epidemiological report presents the analysis of the data (Table 2), updating the previously published report on the analysis of the epidemiological data and preliminary assessment of impact (EFSA 2012⁵).

ASSESSMENT

At present, fourteen Member States (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Poland, Spain, Sweden and United Kingdom) have reported cases of SBV. Switzerland has reported cases in domestic ruminants and Norway reported the detection of SBV in arthropod vectors. The latest information can be found on the relevant competent authority websites (Table 1).

Table 1: URL links to SBV information in EU countries

Austria	http://www.ages.at/ages/gesundheits/tier/schmallenberg-virus/schmallenberg-infektion-erstmalig-in-oesterreich-nachgewiesen/
Belgium	in Dutch: http://www.favv.be/dierengezondheid/schmallenberg/ in French: http://www.favv.be/santeanimale/schmallenberg/ in German : http://www.favv.be/tiergesundheit/schmallenberg/
Denmark	http://www.foedevarestyrelsen.dk/english/animal/animalhealth/schmallenberg%20virus/Pages/default.aspx
Finland	http://www.evira.fi/portal/en/animals/current_issues/?bid=3179
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
Ireland	http://www.agriculture.gov.ie/press/pressreleases/2012/october/title.67350.en.html
Italy	http://www.izs.it/IZS/Engine/RAServePG.php/P/357410010300/M/250010010303
Luxembourg	
Netherlands	http://www.vwa.nl/onderwerpen/dierziekten/dossier/schmallenbergvirus (see link for PDF - Aantallen meldingen per provincie)
Norway	http://tinyurl.com/8nasq9d
Poland	http://www.piwet.pulawy.pl/piwet7/index_b_eng.php?strona=zawar_5
Spain	http://rasve.mapa.es/Publica/InformacionGeneral/Enfermedades/enfermedades.asp
Sweden	http://www.sva.se/upload/Redesign2011/Bilder/Djurhalsa/F%C3%A5r%20och%20g%C3%A4dd/Schm-b_farserum-tryck.jpg
Switzerland	German: http://www.bvet.admin.ch/gesundheits_tiere/01065/04051/index.html?lang=de French: http://www.bvet.admin.ch/gesundheits_tiere/01065/04051/index.html?lang=fr Italian: http://www.bvet.admin.ch/gesundheits_tiere/01065/04051/index.html?lang=it
United Kingdom	http://www.defra.gov.uk/animal-diseases/a-z/schmallenberg-virus/

1. Data collection activities in Member States and reporting to EFSA

Chief Veterinary Officers of the EU Member States, Norway and Switzerland were requested to nominate an official reporting officer for their country. All reporting officers appointed (24 Member States, one EU Accession Country and two European Free Trade Association 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 DCF.

The deadline of 30 October 2012 was given for the submission of the minimum dataset for inclusion in this report. A data submission summary report is presented in Table 2.

⁵ European Food Safety Authority. "Schmallenberg" virus: Analysis of the Epidemiological Data and Assessment of Impact. EFSA Journal 2012;10(6):2768. [89 pp.]. doi:10.2903/j.efsa.2012.2768. Available online: www.efsa.europa.eu/efsajournal

Austria has not yet reported any data to EFSA although reports of case detection are now publicly available (see table 1). Last Ireland report is dated from 16 April 2012 and reporting of first SBV case detection occurred after the current EFSA reporting deadline.

Table 2: Data submitted by Member States

Country	Date of Last Data Submission to EFSA	Confirmed Cases Cattle	Confirmed Cases Sheep	Confirmed Cases Goats
Belgium*	March 21, 2012	Y	Y	Y
Denmark	September 27, 2012	Y	N	N
Finland	October 31, 2012	Y	N	N
France	September 17, 2012	Y	Y	Y
Germany	October 23, 2012	Y	Y	Y
Ireland*	April 16, 2012	N	N	N
Italy	September 18, 2012	Y	N	Y
Luxembourg	October 24, 2012	Y	Y	N
Netherlands	September 24, 2012	Y	Y	Y
Norway*	May 03, 2012	N	N	N
Poland	November 02, 2012	Y	N	N
Spain*	May 10, 2012	N	Y	N
Sweden	October 02, 2012	Y	N	N
Switzerland	October 30, 2012	Y	Y	Y
United Kingdom	November 01, 2012	Y	Y	N

*No new cases reported since the last EFSA epidemiological update

2. Minimum dataset – herd level

The herd level dataset was based upon data currently being collected within the affected Member State. The dataset was used to obtain information on the spread of SBV in the EU, both temporally (date of first suspicious report) and spatially (country/region of affected herd/flock). The dataset has also been used to estimate between herd impact, by analysing proportion of holdings with laboratory confirmed cases at Nomenclature of Territorial Units for Statistics (NUTS) level 2.

2.1. Number of affected herds

A summary of the number of suspect/confirmed holdings meeting the case definition is presented in Table 3 by species and country. The summary of test results in Table 3 is presented considering the number of holdings where at least one animal was tested or one least one result was positive.

All affected Member States have reported the number of confirmed herds following viral detection by PCR, virus neutralisation test or serological confirmation. An increased number of test results is based on serological detection of SBV antibodies and this can only be used as evidence of infection but provides does not provide information on whether detected cases are in the clinical phase of the disease (i.e. new occurrence). It should also be highlighted that other testing strategies are being used, for example Sweden, is currently using bulk milk testing which allows for the screening of a large number of dairy farms.

Sweden has used bulk milk testing in the screening of 648 dairy farms that lead to the detection of one positive herd in which the animals were then tested individually. Three positive individuals were found.

Switzerland previously reported herds where malformed offspring were tested by RT-PCR and the dams by serological testing, all results were negative. Since summer 2012 acute symptomatic adults were serologically tested and a total of 301 herds are now SBV confirmed. Five herds with AHS cases have been reported (three herds confirmed by virus detection and two confirmed by serology).

No surveillance of acute adult cases is being done in France and the surveillance of congenital SBV finished on 31 August but will restart in November 2012.

Norway has still not detected any cases of SBV infection among livestock. However, SBV was isolated in biting midges trapped in southern Norway as part of their surveillance program.

No new cases were reported from Spain or Belgium. Although notifications are available in the web from cases in Ireland and Austria these have not been reported to EFSA.

The following country status updates were conveyed from the nominated data providers by e-mail:

Lithuania reported that there have been no observations of malformations and other symptoms typical for SBV in the herds of ruminants. The Lithuanian National Food and Veterinary Risk Assessment Institute has tested a total of 422 samples which include 354 blood samples, 23 organs of animals, 45 culicoides. No positive cases have been detected.

Cyprus also reported that no suspect or confirmed cases of SBV were observed.

The total number of holdings with laboratory confirmed cases SBV in Europe in October 2012 is approximately 6000.

Table 3: Number of reported herds by species (1 August 2011 – 30 October 2012)

<i>Ruminant</i>	<i>Country</i>	<i>Reported Holdings</i>	<i>Holdings SBV not confirmed</i>	<i>Holdings SBV confirmed</i>	<i>Holdings Foetus neonate RT-PCR tested</i>	<i>Holdings Foetus neonate RT-PCR confirmed</i>	<i>Holdings Adults RT-PCR tested</i>	<i>Holdings Adults RT-PCR confirmed</i>	<i>Holdings Adults serology tested</i>	<i>Holdings Adults serology confirmed</i>
Bison	France	1	0	1	1	1	0	0	.	.
Bison		1	0	1	1	1	0	0	.	.
Cattle	Belgium	74	0	74	74	74	0	0	.	.
	Denmark	24	23	1	24	1	0	0	0	0
	Finland	10	9	1	9	0	0	0	1	1
	France	3638	1620	2018	3638	2018	0	0	.	.
	Germany	820	0	820	811	811	8	8	4	4
	Ireland	44	44	0	44	0	1	0	.	.
	Italy	7	4	3	6	1	5	0	5	2
	Luxembourg	36	14	22	35	22	1	0	0	0
	Netherlands	1303	1066	237	1303	236	.	.	132	128
	Norway	4	4	0	4	0	0	0	0	0
	Poland	2	0	2	0	0	2	2	2	2

<i>Ruminant</i>	<i>Country</i>	<i>Reported Holdings</i>	<i>Holdings SBV not confirmed</i>	<i>Holdings SBV confirmed</i>	<i>Holdings Foetus neonate RT-PCR tested</i>	<i>Holdings Foetus neonate RT-PCR confirmed</i>	<i>Holdings Adults RT-PCR tested</i>	<i>Holdings Adults RT-PCR confirmed</i>	<i>Holdings Adults serology tested</i>	<i>Holdings Adults serology confirmed</i>
	Spain	8	8	0	3	0	6	0	1	0
	Sweden	26	25	1	23	0	0	0	7	1*
	Switzerland	296	0	296	5	3	35	27	289	276
	United Kingdom	137	50	87	.	64	17	9	19	19
<i>Cattle</i>		6429	2867	3562	5979	3230	75	46	460	433
Goats	Belgium	2	0	2	2	2	0	0	.	.
	Denmark	2	2	0	2	0	0	0	0	0
	France	111	76	35	111	35	0	0	.	.
	Germany	48	0	48	48	48
	Ireland	2	2	0	2	0	0	0	.	.
	Italy	1	0	1	1	1	1	0	1	1
	Luxembourg	1	1	0	1	0	0	0	0	0
	Netherlands	38	32	6	38	6	.	.	4	4
	Spain	1	1	0	0	0	1	0	0	0
	Sweden	1	1	0	1	0	0	0	0	0
	Switzerland	1	0	1	0	0	0	0	1	1
<i>Goats</i>		208	115	93	206	92	2	0	6	6
Horses	Netherlands	1	1	0	1	0	.	.	0	0
<i>Horses</i>		1	1	0	1	0	.	.	0	0
Sheep	Belgium	155	0	155	155	155	0	0	.	.
	Denmark	16	16	0	16	0	0	0	0	0
	Finland	2	2	0	2	0	0	0	0	0
	France	1836	693	1143	1836	1143	0	0	.	.
	Germany	634	0	634	634	634
	Ireland	10	10	0	10	0	0	0	.	.
	Italy	1	1	0	1	0	1	0	1	0
	Luxembourg	10	4	6	10	6	0	0	0	0
	Netherlands	349	241	108	349	107	.	.	82	81
	Norway	5	5	0	5	0	0	0	0	0
	Spain	8	3	5	6	1	5	0	5	5
	Sweden	30	30	0	30	0	0	0	7	0
	Switzerland	4	0	4	0	0	0	0	4	4
	United Kingdom	362	139	223	.	223	0	0	0	0
<i>Sheep</i>		3422	1144	2278	3054	2269	6	0	99	90
Unknown	France	63	42	21	63	21	0	0	.	.

<i>Ruminant</i>	<i>Country</i>	<i>Reported Holdings</i>	<i>Holdings SBV not confirmed</i>	<i>Holdings SBV confirmed</i>	<i>Holdings Foetus neonate RT-PCR tested</i>	<i>Holdings Foetus neonate RT-PCR confirmed</i>	<i>Holdings Adults RT-PCR tested</i>	<i>Holdings Adults RT-PCR confirmed</i>	<i>Holdings Adults serology tested</i>	<i>Holdings Adults serology confirmed</i>
<i>Unknown</i>		63	42	21	63	21	0	0	.	.
<i>Total holdings</i>		10124	4169	5955	9304	5613	83	46	565	529

* Positive herd in Sweden was detected by serological testing of bulk milk samples and subsequent testing of individual animals

Table 4: Recent SBV detections by month of first report and species (1 August 2012 – 30 October 2012)

Month	Species	Holdings Reported	Holdings with AHS cases	Holdings Positive Direct Detection	Foetus Neonates Positive Direct Detection	Holdings Acute Adults	Holdings Adults Positive Direct Detection	Adults Positive Direct Detection	Holdings Adults Positive Serology	Adults Positive Serology
Aug 2012	Cattle	380	294	216	216	84	14	48	82	173
	Sheep	6	6	3	3	.	0	0	.	0
	Unknown	15	15	7	7	.	0	0	.	0
Sep 2012	Cattle	120	18	18	18	100	4	7	99	160
	Sheep	2	1	1	1	1	0	0	1	44
Oct 2012	Cattle	106	3	2	2	90	1	1	102	171
	Goats	1	0	0	0	1	0	0	1	1
	Sheep	3	0	0	0	3	0	0	3	10

In August 2012 294 herds were reported with AHS symptoms in cattle. These reports came from France, Germany and Switzerland. In September and October the number of herds with AHS symptoms decreased with only one herd from the United Kingdom and one herd from Switzerland being reported in October. However acute cases in adult animals (where clinical signs were observed and SBV diagnosis confirmed) were reported in August, September and October in Switzerland and United Kingdom. It is important to note that the number of countries reporting acute adult cases is limited to Switzerland and UK and it is likely that acute adult cases are not diagnosed considering the transitory and non specific nature of the clinical signs related with SBV infection in adult animals. A increase of the number of AHS cases (in newborns) is likely to occur in the coming months resulting of infection of previously unexposed animals in the susceptible period of gestation.

2.2. Temporal spread

The temporal analysis was performed for SBV confirmed herd reports. The time of the first herd report by week per country from September 2011 to October 2012 is shown in Figure 1. An increase in the number of confirmed herds is observed with a peak in the week 9 of the year 2012 (February, 27 – March, 4) followed by a steep decrease in the following weeks, a subsequent smaller peak is observed in week 19 (May 2012). No information was available for Belgium beyond week 11 however it is known that new SBV cases were being observed beyond week 11. It can be seen that the SBV has continued to circulate within Europe with newly affected herds being reported in October 2012.

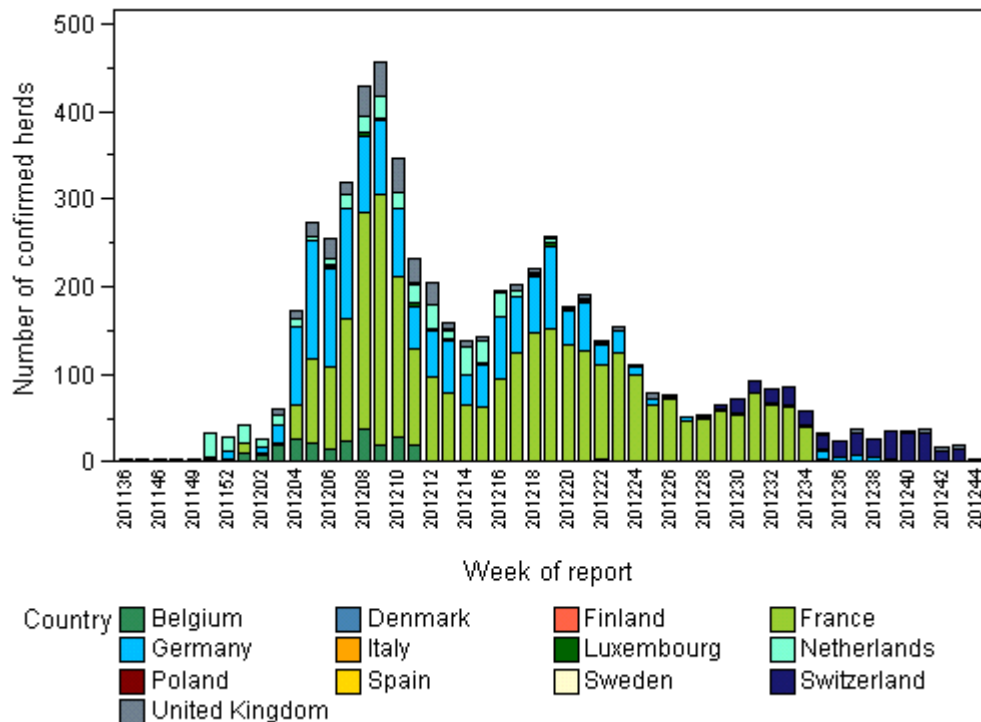


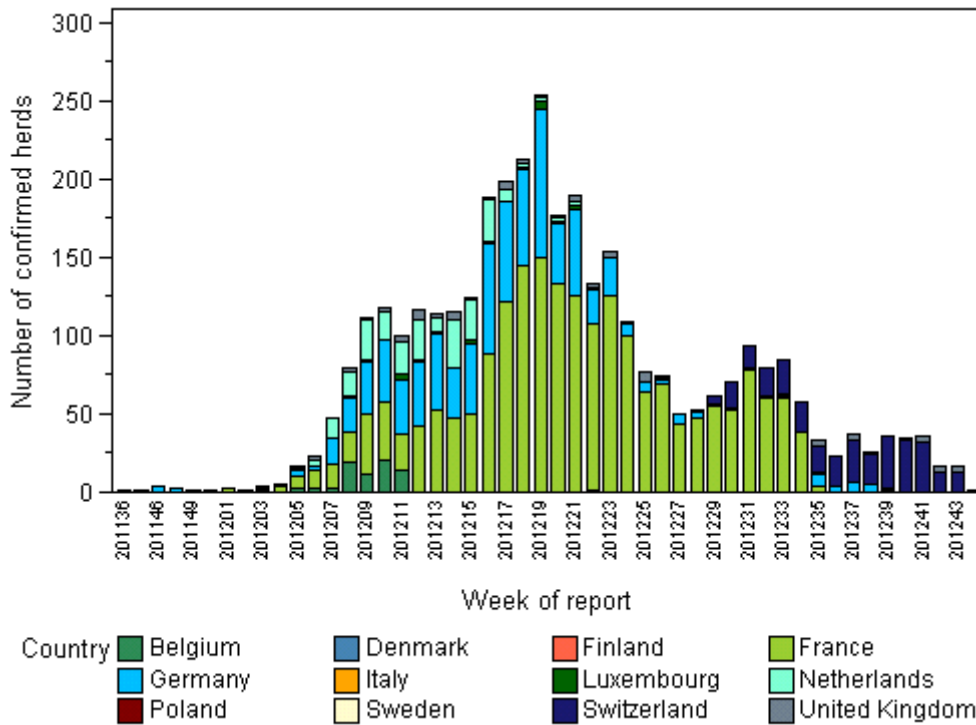
Figure 1: Confirmed herds by week of first report and country.

A comparison of the temporal spread by week of first herd report for each species was carried out (Figure 2). In the sheep the decrease after week 9 (February, 27 – March, 4) noted in Figure 1 is also seen in Figure 2 and very few cases are observed after week 19 (7- 13 May 2012). This decrease is due to the end of the lambing season in affected countries, it is likely that new cases in sheep will be reported in spring 2013.

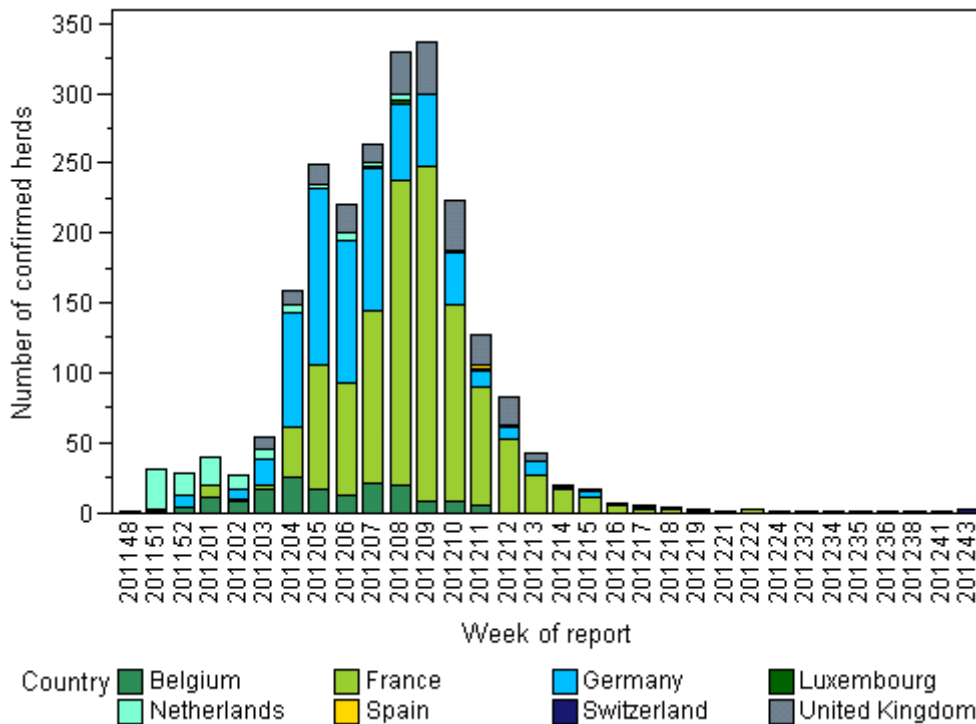
In cattle a peak is observed in week 19 with a subsequent decrease but newly affected herds continue to be reported throughout the summer months. Many of the newly affected herds reported from August to October are acute adult cases in Switzerland. Acute adult cases have also been observed in the United Kingdom during this time period.

For goats, the peak in SBV affected herds was during week 8 (20 -26 February 2012). No further cases were reported after week 25, later on one herd was identified by serological testing in week 41 (8-14 October 2012) in Switzerland.

CATTLE



SHEEP



GOATS

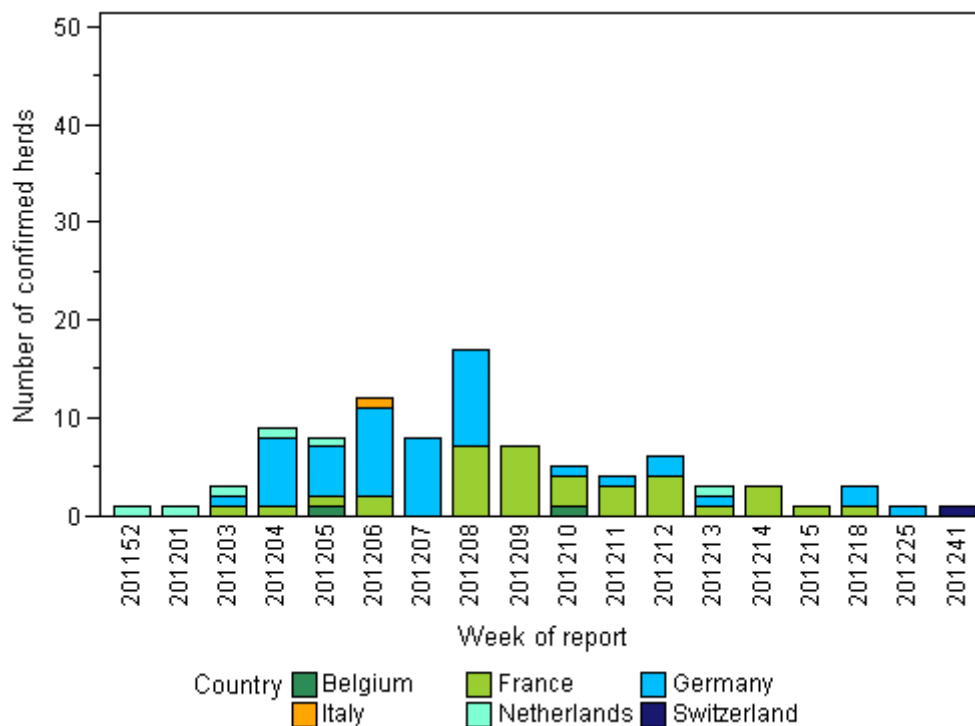


Figure 2: Confirmed herds by week of first report, country and species.

2.3. Spatial spread

Member States reported the location of confirmed cases for cattle, sheep and goats herds using the NUTS geographical classification scheme. Figure 3: and Figure 4: show the spatial spread of confirmed SBV herds for all ruminants and cattle respectively for NUTS 2 regions.

In Figure 3 it can be seen that at the time of publication of the last EFSA epidemiological update (EFSA 2012⁶) in May; Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Spain and United Kingdom had reported confirmed cases of SBV. During the summer, SBV confirmed cases were reported in new regions; including Denmark, Sweden, Switzerland, the Bretagne region in France, new regions in Germany and two regions of Poland (Zachodniopomorskie and Śląskie). More recently reports of laboratory confirmed SBV cases indicate the virus has now spread to the Åland islands in Finland and to the North of England and Wales in the United Kingdom. Other epidemiology reporting services indicate that SBV has also been detected in Austria and Ireland. SBV is continuing to spread to new areas of Europe, and it is likely that new SBV cases will be observed in Southern and Eastern regions of Europe in 2013.

Figure 4 presents the range of regions with SBV confirmed cases in cattle, in addition regions where acute adult cases have been observed are included by month of first report. It can be seen that at the beginning of the outbreak in September and November 2011 acute adult cases were observed in the Arnsberg and Dusseldorf regions. New acute adult cases are now being reported (July-October 2012) in Switzerland and previously unaffected areas of the United Kingdom, in areas which can be considered as the edge of previously affected areas.

⁶ European Food Safety Authority. "Schmallenberg" virus: Analysis of the Epidemiological Data and Assessment of Impact. EFSA Journal 2012;10(6):2768. [89 pp.]. doi:10.2903/j.efsa.2012.2768. Available online: www.efsa.europa.eu/efsajournal

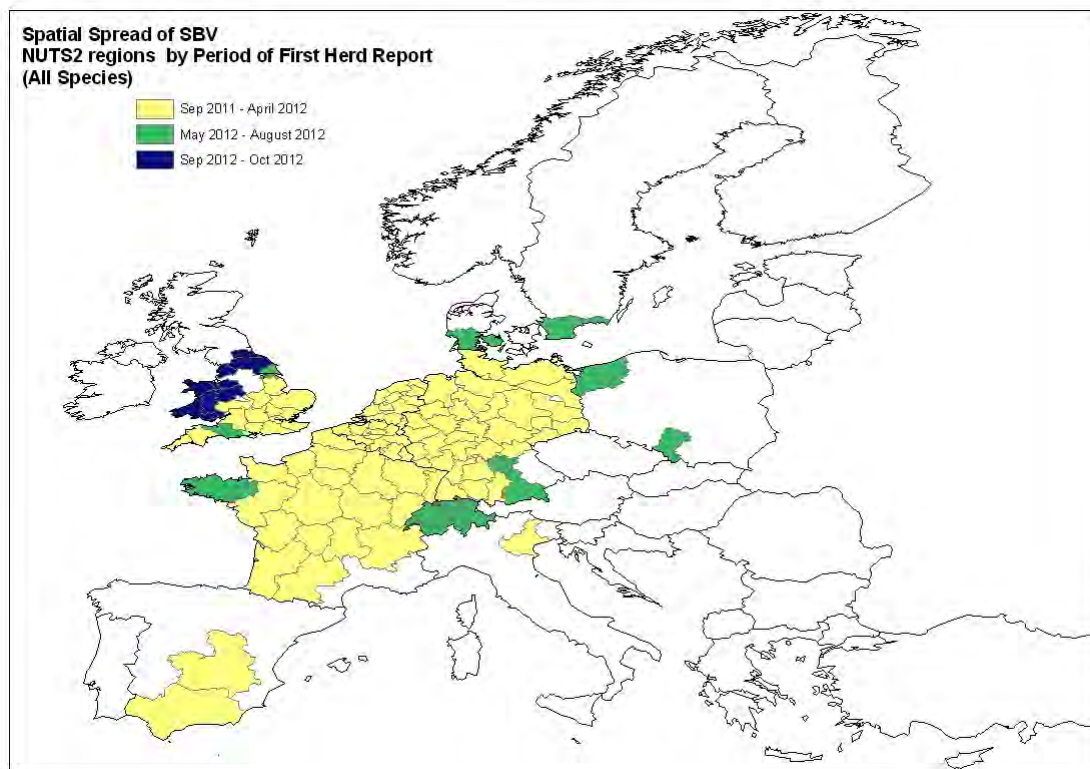


Figure 3: NUTS2 regions with at least one SBV confirmed herd – All species by period of first report

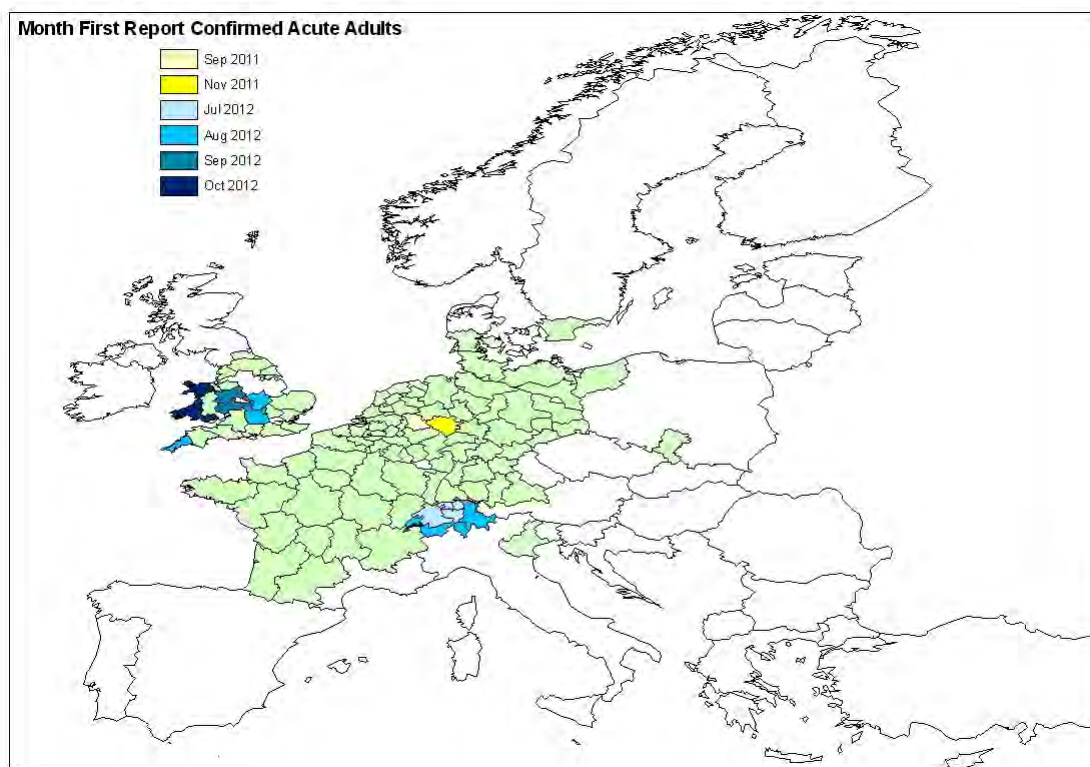


Figure 4: NUTS2 regions with at least one SBV confirmed cattle herd (areas in green). Regions with reports of acute adult cases by month and year of first report are highlighted in yellow and blue.

2.4. Impact analysis

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

The proportion of SBV confirmed sheep and cattle herd per region is presented in Figure 5 and 6 respectively.

The total number of sheep and cattle herds in EU were obtained from Eurostat 2007 (http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database). For all affected countries, the number of SBV confirmed herds is low compared with the total number of herds. The maximum proportion of confirmed sheep herds per region is 6.6% and 4% for cattle herds. Nevertheless, these comparisons should be interpreted cautiously since under reporting or lack of confirmation may affect the ratio.

No information is available to assess the within herd impact of SBV infection.

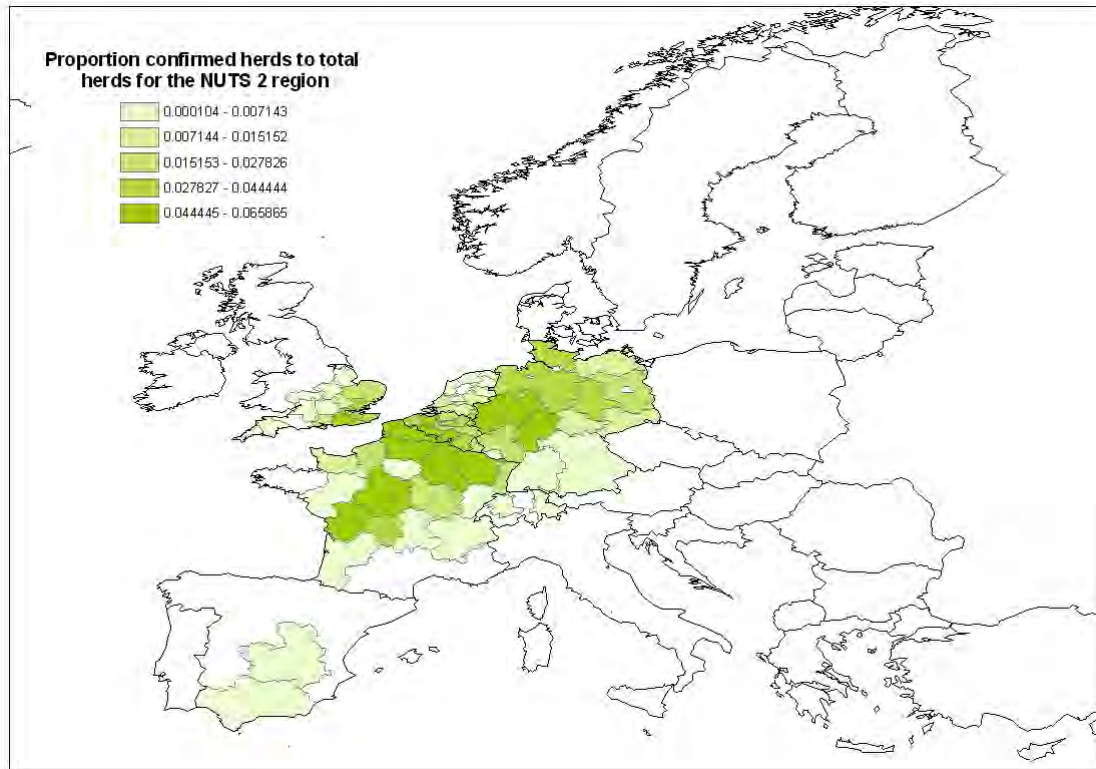


Figure 5: Total number of SBV confirmed sheep herds versus total number of sheep herds per NUTS2 region.

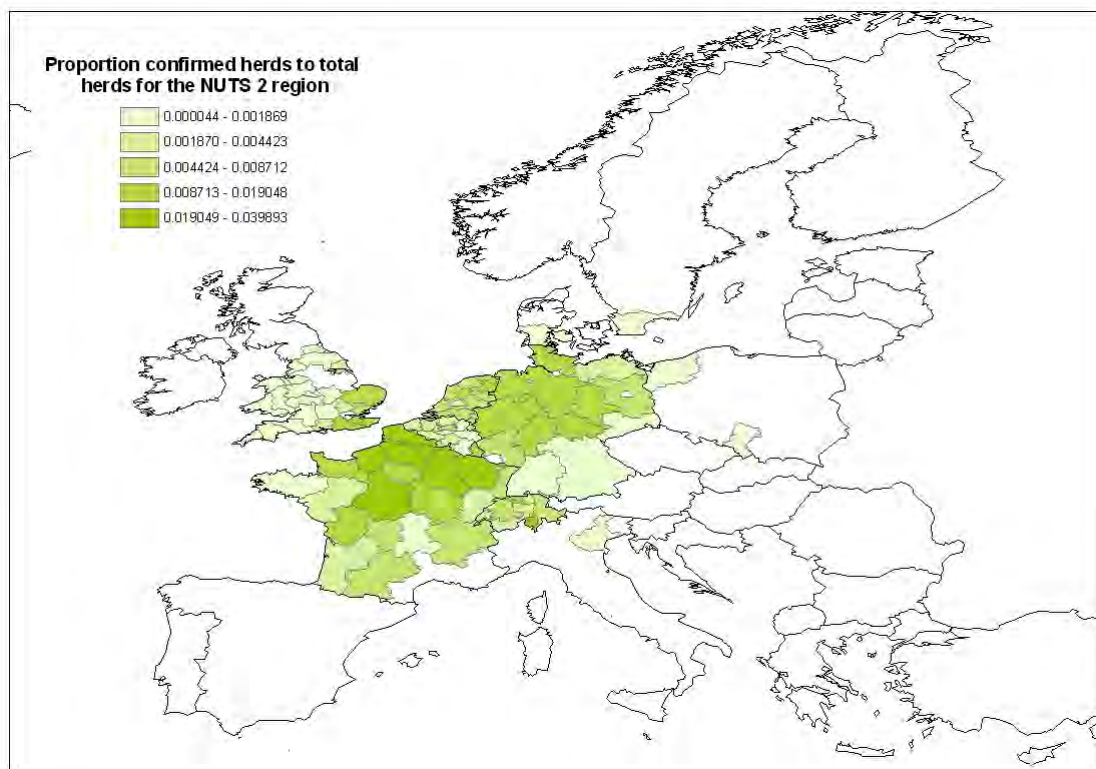


Figure 6: Total number of SBV confirmed cattle herds versus total number of cattle herds per NUTS2 region.

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 assessment of impact and spread for this emerging disease in animals. EFSA has received a new mandate "*Request for maintaining technical assistance on the possible risks for animal health caused by the Schmallenberg virus*" and is requested "*Continue to collect data through the EFSA Data Collection Framework (DCF) from Member States in a structured manner in coordination with DG SANCO. This should allow for updates of EFSA reports (three times per year) on the description of the epidemiological situation of SBV in the EU*". The reporting guidelines have been updated based on the experience gained from the reports submitted in spring 2012. Member States (MS) affected by SBV are kindly requested to submit data as described in the "MINIMUM DATASET" section of this document.

MINIMUM DATASET – HERD/FLOCK LEVEL

Reporting deadlines

- 1) MS should provide the minimum dataset for all herds affected between 1 August 2011 – 31 July 2012. This will be used to provide an overview of the SBV situation after 1 year. In MS where follow up studies have been completed the number of offspring with Arthrogryposis hydranencephaly syndrome (AHS) should be completed in the ahs element, as currently there is limited information on with-in herd impact for this disease. Dataset should be submitted by the **21 September 2012**
- 2) MS should provide the minimum dataset for the current situation, with a focus on newly affected herds, herds where acute adult cases have been observed and previously affected herds with new AHS cases. Dataset should be submitted by the **30 October 2012**

The information provided will be published in an Epidemiological update **15 November 2012**

- 3) MS should provide the minimum dataset for the current situation, with a focus on newly affected herds especially in new regions, previously affected herds with new AHS cases and the number of AHS cases observed in affected herds in order to measure with-in herd impact. Dataset should be submitted by the **10 May 2013**

The information provided will be published in an Epidemiological update **31 May 2013**

Objectives

This dataset will be used in the epidemiological updates published by EFSA. 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) and to identify newly affected regions. The information will also be used to investigate the with-in herd impact of SBV in terms numbers of AHS cases and acute adult cases observed in affected herds.

Plan of analysis

Descriptive statistics will be provided on the number herds with AHS cases, acute adult cases and results of laboratory testing by species at country and EU level. Temporal evaluation of spread based on date of first suspicious report in a herd by species. Spatial evaluation of spread by NUTS region based on confirmed herds. Within herd impact analysis considering reported AHS cases and acute adult cases by species, holding type and country.

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.

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, brachygnathia inferior, behavioural abnormalities and blindness).

Confirmed case: Following suspicion, a confirmation of viral infection by RT-PCR, virus isolation or ELISA for blood samples taken pre-colostrum intake

Adult animals

Suspicious case: Ruminants with transient fever (>40°C), diarrhoea, anorexia 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 IFAT.

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

<i>code</i>	<i>name</i>
04421	Alpaca (<i>Vicugna pacos</i>)
9281	Alpine chamois (<i>Rupicapra</i> spp.)
11681	Barbary sheep (<i>Ammotragus lervia</i>)
1601	Bison (<i>Bison bison</i>)
14001	Buffalos (<i>Syncerus caffer</i>)
81	Camels (<i>Camelus</i> spp.)
6581	Cattle (<i>Bos taurus</i>)

1401	Deer (<i>Capreolus</i> spp., <i>Cervus</i> spp., <i>Dama</i> spp.)
6761	Goats (<i>Capra aegagrus</i>)
14081	Lamas (<i>Lama glama</i>)
11501	Mouflons (<i>Ovis musimon</i>)
22101	Mountain goats (<i>Oreamnos americanus</i>)
281	Reindeers (<i>Rangifer tarandus</i>)
10061	Sheep (<i>Ovis aries</i>)
2861	Solipeds, domestic (<i>Equidae</i>)
6821	Water buffalos (<i>Bubalus</i> spp.)
00000	Other

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

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 –the reporting of herd statistics has been simplified based on the previous data submissions, two new Boolean elements have been added to identify herds where AHS cases or acute adult cases have been observed even if the exact number of cases is not known. 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 -9999.

Totals should be reported from the data of first suspicious report 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 year. 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.

New AHS cases in previously affected herds – for those holdings with first suspicious report date between 1 August 2011 and 31 July 2012 indicate if AHS cases have been reported in the herd of flock after 31 July 2012.

<i>Element name</i>	<i>Definition</i>	<i>Data type</i>	<i>Mandatory</i>	<i>Catalogue</i>
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, wool or other	String(5)	Y	MEAT, MILK, MIXED, WOOL, OTHER
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 year or the date of first suspicious report	String(4)	Y	ENDY, SUSP

animals	Number of adult animals in herd/flock (male and female; greater than 12 months for cattle, greater than 6 months for sheep and goats)	Integer(6)	Y	
females	Number adult females in herd/flock (greater than 12 months for cattle, greater than 6 months for sheep and goats)	Integer(6)	Y	
ahs	Number of arthrogryposis hydranencephaly syndrome cases observed in the herd from date of first suspicious report 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) from date of first suspicious report to date of data transmission	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)	Y	
adultsTestSeroPos	Number of positive adult animals tested for SBV by indirect detection methods in herd/flock	Integer(6)	Y	
ahsCases	Indicate if AHS has been observed in the foetuses or neonates in the herd/flock	String (1)	Y	Y/N/U
acuteAdults	Indicate if adults with acute symptoms and confirmation by laboratory testing have been observed in the herd/flock	String (1)	Y	Y/N/U
newAHSCases	For previously affected herds/flocks indicate if new AHS cases have been observed after 31 July 2012	String (1)		Y/N/U

Samples and Laboratory Methods

Pathogen detection: Pathogen detection is done by real-time RT-PCR⁷ or virus isolation (insect cells (KC), hamster cells (BHK), monkey kidney cells (VERO)).

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 (cerebrum and brainstem), amniotic fluid and placenta.

⁷ Bilk S, Schulze C, Fischer M, Beer M, Hlinak A, Hoffmann B. 2012. Organ distribution of Schmallenberg virus RNA in malformed newborns. Vet Microbiol. 2012 Mar 30.

Indirect detection: Antibody detection by indirect immuno-fluorescence, virus neutralization test or ELISA.

Samples for indirect detection foetuses, abortions, stillbirths and malformed ruminants: blood (pre-colostral) or pericardial fluid.

Samples for indirect detection in adult animals: EDTA blood or serum

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
