SCIENTIFIC REPORT

The European Union summary report on data of the surveillance of ruminants for the presence of transmissible spongiform encephalopathies (TSEs) in 2015

European Food Safety Authority (EFSA),
Frank Boelaert, Marta Hugas, Angel Ortiz Pelaez, Valentina Rizzi, Pietro Stella and Yves Van Der Stede

Abstract

This report of EFSA presents the results of surveillance activities on transmissible spongiform encephalopathies (TSEs) in bovine animals, sheep and goats as well as genotyping data in sheep, carried out in 2015 in the EU and in three non-Member States (non-MS). Since 2001, approximately 114 million cattle in the EU have been tested for bovine spongiform encephalopathy (BSE) according Regulation (EC) 999/2001. In 2015, 1.4 million bovine animals were tested and five cases were detected in four MS (Ireland: one case; Slovenia: one case; Spain: one case; and the United Kingdom: two cases) and one case was detected in Norway. Two cases (in Ireland and the United Kingdom) were affected by classical BSE and both cases were born after the EU-wide feed ban enforced in 2001. The remaining four cases were atypical BSE cases (three H-BSE type and one L-BSE type). Since 2002, approximately 8.4 million small ruminants have been tested during the EU-wide surveillance for scrapie. In 2015, 319,638 sheep and 135,857 goats were tested. In total, 641 scrapie cases in sheep were detected in 18 MS while 1,052 scrapie cases in goats were detected in nine MS, respectively. In two non-MS (Iceland and Norway), 40 scrapie cases in sheep were detected. Although in a number of MS the decrease in classical scrapie is clear, at the EU level there is no clear decreasing trend in the occurrence of scrapie in small ruminants. Results obtained from genotyping in sheep confirm that cases of classical scrapie are clustered among certain genotypes, and animals with these genotypes seem to account for less than 20% of the European randomly sampled sheep population. In total, 580 samples from species other than domestic ruminants were tested for TSE in three MS, all with negative results.

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Summary

This report of the European Food Safety Authority (EFSA) presents the detailed results of monitoring activities on transmissible spongiform encephalopathies (TSEs) in bovine animals, sheep and goats carried out during 2015 in the European Union (EU) and three non-Member States (non-MS) as well as a summary and trends of the monitoring between 2001 and 2015.

TSE monitoring data for bovine animals and small ruminants are reported by countries according to Regulation (EC) 999/2001 and consist of testing data (monthly reported) as well as case data (positive tested and/or confirmed positive animals). Data regarding the genotyping activities carried out on the ovine TSE cases, as well as on randomly selected sheep, were retrieved from the annual reports submitted by the Member States (MS) and non-MS in accordance with Article 6.4 of, and as specified in Chapter B.I of Annex III to, Regulation (EC) 999/2001, i.e. the TSE Regulation.

Descriptive statistics were used to analyse the data. Where possible, descriptions and calculations were stratified according to the available variables in the database, such as surveillance target group (healthy slaughtered animals, animals culled under bovine spongiform encephalopathy (BSE)/TSE control and eradication measures, etc.) or activity (passive vs active surveillance), country, year (since 2001 and 2002, respectively, for bovine animals and small ruminants), case type (i.e. classical BSE (C-BSE), atypical BSE (H-BSE or L-BSE), classical scrapie (CS) or atypical scrapie (AS)), flock status (infected/non-infected) and age class.

Since 2001, approximately 114 million bovine animals have been tested for BSE in the EU. There has been a decrease in the number of animals tested over time following amendments in the Regulation (EC) 999/2001. In 2015, around 1.4 million animals were tested in the EU. The number of positive BSE cases has also decreased over time, both in terms of absolute number of cases as well as the proportion of cases in tested animals. In 2015, only five BSE cases were detected in the EU, all among tested fallen stock from four different MS (Ireland, Slovenia, Spain and the United Kingdom). Two cases were C-BSE, both of them born after the EU-wide feed ban was enforced in 2001 (BARB cases). The remaining three cases in the EU were of atypical type (two H-BSE and one L-BSE, respectively). In addition, one case of H-BSE was detected in one non-MS (Norway).

A clear decline in the annual rate of cases per million tests performed was observed for the whole period of BSE monitoring in the EU (2001–2015). An increase in the age of the affected animals is observed and there is an accumulation of cases in animals born in the mid-1990s.

Since 2002, approximately 8.4 million small ruminants have been tested for scrapie in the EU. In 2015, approximately 300,000 sheep and 135,000 goats were tested. In 2015, 641 scrapie cases in sheep and 1,052 scrapie cases in goats were detected in the EU. The scrapie cases in sheep were detected in 18 MS, whereas caprine cases (± 90% reported by Cyprus) were detected in nine MS. In addition, 40 cases in sheep were detected in two out of the three reporting non-MS. There is no clear trend of improvement in the epidemiological situation of small ruminant TSEs overall in the countries included in the report, either in terms of the absolute number of cases or cases in tested animals. However, in some MS there is a decline of CS. The genotyping data confirm that CS in sheep is clustered among genetically susceptible animal while these animals account for less than 20% of the random sampled sheep.

In addition, 580 samples from species other than domestic animals were tested in three MS (Estonia, Finland and Hungary) in 2015 by, all with negative results.

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1. Introduction

1.1. Background and Terms of Reference

According to Part I.A, Chapter B.I Annex III of Regulation (EC) 999/2001[1] (hereinafter referred to as the transmissible spongiform encephalopathy (TSE) Regulation), the information to be presented by the Member States (MS) in their annual report, as provided for in Article 6(4), includes:

1) The number of suspected cases placed under official movement restrictions in accordance with Article 12(1), per animal species.
2) The number of suspected cases subject to laboratory examination in accordance with Article 12(2), per animal species, including the results of the rapid and confirmatory tests (number of positives and negatives) and, with regard to bovine animals, the age distribution of all tested animals. The age distribution should be grouped as follows: 'below 24 months', distribution per 12 months between 24 and 155 months, and 'above 155 months' of age.
3) The number of flocks where suspected cases in ovine and caprine animals have been reported and investigated pursuant to Article 12(1) and (2).
4) The number of bovine animals tested within each subpopulation referred to in Chapter A, Part I, points 2.1, 2.2, 3.1 and 5. The method of the sample selection, the results of the rapid and confirmatory tests and the age distribution of the tested animals grouped as set out in point 2 shall be provided.
5) The number of ovine and caprine animals and flocks tested within each subpopulation referred to in Chapter A, Part II, points 2, 3, 5 and 6 together with the method for sample selection and the results of the rapid and confirmatory tests.
6) The geographical distribution, including the country of origin if not the same as the reporting country, of positive cases of BSE and scrapie. The year, and where possible the month of birth shall be given for each TSE case in bovine, ovine and caprine animals. TSE cases which have been considered atypical shall be indicated.
   For scrapie cases, the results of the primary and secondary molecular testing, referred to in Annex X, Chapter C, point 3.2(c), shall be reported, where appropriate.
7) In animals other than bovine, ovine and caprine animals, the number of samples and confirmed TSE cases per species.
8) The genotype, and, where possible, the breed, of each ovine animal either found positive to TSE and sampled in accordance with Chapter A, Part II, point 8.1, or sampled in accordance with Chapter A, Part II, point 8.2.

According to Chapter B.II, 'the compilation of reports containing the information referred to in B.I and submitted to the Commission (which shall send it to the European Food Safety Authority) on a monthly basis in the electronic format agreed between the MS, the Commission and the European Food Safety Authority or, with regard to the information referred to in point 8 on a quarterly basis, may constitute the annual report as required by Article 6(4), provided that the information is updated whenever additional information becomes available'.

The Union summary shall be presented in a tabled format covering at least the information referred to in Part I.A Chapter B.I for each MS.

From 1 January 2016, the European Food Safety Authority (EFSA) shall analyse the information referred to in Part I Chapter B.I and publish by the end of November a summary report on the trends and sources of TSEs in the European Union (EU).

1.2. Surveillance of TSEs in the European Union

1.2.1. Legal basis

Animals suspected of a TSE should be examined in accordance with Article 12.2 of the TSE Regulation. The legal framework for the active monitoring of ruminants for the presence of TSE is laid down in Article 6 of the TSE Regulation, and specified in its Annex III Chapter A.

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[1] Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies. OJ L 147 31.5.2001, p. 1.

Out of the 27 MS at that time, Commission Decision 2009/719/EC,[2] allowed 25 MS (all except Bulgaria, Romania) to apply a revised bovine spongiform encephalopathy (BSE) monitoring programme. Commission Implementing Decision 2013/76/EU[3] of 4 February 2013, amending Commission Decision 2009/719/EC, authorised these 25 MS to decide to stop testing healthy slaughtered bovine animals.

The legal basis for the sample collection and for the test methods is laid down in Chapter C of Annex X of the TSE Regulation. From 2005, Annex X (as amended by Commission Regulation (EC) No 36/2005[4]) also provides for mandatory discriminatory testing for BSE of TSE cases detected in small ruminants.

The legal basis for the testing for the determination of the prion protein genotypes (genotype testing) is laid down in points 8.1 and 8.2 of Chapter A in Annex III of TSE Regulation.

1.2.2. BSE surveillance of bovine animals

The BSE surveillance of bovine animals is based on the testing of samples from the following target groups:

- **Animals clinically suspected of being infected by BSE (SU):** Live, slaughtered or dead animals that show or have shown neurological or behavioural disorders or a progressive deterioration of the general condition linked to impairment of the central nervous system and for which the information gathered on the basis of a clinical examination, response to treatment, a post-mortem examination or ante- or post-mortem laboratory analysis do not allow an alternative diagnosis to be established. BSE shall be suspected in bovine animals, which have produced a positive result from a rapid test specifically for BSE as defined in Article 3 1(h) of the TSE Regulation and subject to the measures described in Articles 12 and 13.

- **Animals culled under BSE eradication measures (EM):** Birth cohorts (bovine animals born in the same herd as the affected bovine animal, and within 12 months preceding or following the date of birth of the affected bovine animal), rearing cohorts (bovine animals which at any time during the first year of their lives were reared together with the affected bovine animal during the first year of its life) (point 2 Annex I) and, where the disease was confirmed in a female animal, its progeny born within a period of 2 years prior to, or after, the clinical onset of the disease (point 1(a) Chapter B Annex VII).

- **Animals with clinical signs at ante mortem (AM):** Bovine animals with (abnormal) observations at ante mortem inspections (Article 6 1a(a)).

- **Emergency slaughtered (ES):** Bovine animals sent for emergency slaughter (Article 6 1a(a)).

- **Fallen stock (FS):** Bovine animals not slaughtered for human consumption that have died or been killed on the farm, during transport or in an abattoir (Article 6 1a(c)) (the MS may decide to derogate from this provision in remote areas with low animal density, where no collection of dead animals is organised). The derogation shall not cover more than 10% of the bovine population in the MS.

- **Healthy slaughtered (HS):** Bovine animals slaughtered for human consumption (Article 6 1a (b)).

The categories of bovine animals to be submitted to BSE testing are defined in the TSE Regulation and are based on a combination of age (limits) and surveillance target groups. The general rules for BSE surveillance, applied in 2015, are summarised in Table 1. The age limits, to be applied for certain surveillance target groups, have been changed over time and the main changes are summarised in Table 2. There are some differences in the application of these general rules due to specific national rules, these national rules, as applied in 2015, are shown in Table 3.

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[2] 2009/719/EC: Commission Decision of 28 September 2009 authorising certain Member States to revise their annual BSE monitoring programmes. OJ L 256, 29.9.2009, p. 35–37, as last amended.

[3] 2013/76/EU: Commission Implementing Decision of 4 February 2013 amending Decision 2009/719/EC authorising certain Member States to revise their annual BSE monitoring programmes. OJ L 35, 6.2.2013, p. 6–7.

[4] Commission Regulation (EC) No 36/2005 of 12 January 2005 amending Annexes III and X to Regulation (EC) No 999/2001 of the European Parliament and of the Council as regards epidemio-surveillance for transmissible spongiform encephalopathies in bovine, ovine and caprine animals. OJ L 10, 13.1.2005, p. 9–17.

Table 1: Criteria for BSE surveillance in bovine animals in 2015 by country, age limit and surveillance target group based on Regulation (EC) No 999/2001 as amended and Commission Implementing Decision 2013/76/EU of 4 February 2013

	EU 25	EU 3: Romania, Bulgaria, Croatia[a]
Animals with clinical signs at ante mortem (AM); emergency slaughtered animals (ES); fallen stock (FS)	> 48 months	> 24 months
Healthy slaughtered animals (HS)	No mandatory testing required	> 30 months
Animal culled under BSE eradication measures (EM)	> 48 months	> 24 months
BSE suspects (SU)	All	All

(a): Different criteria were applied in 2015 because Bulgaria, Croatia and Romania were not in the list of the 25 MS at that time authorised to revise their BSE annual surveillance programmes according to Commission Implementing Decision 2013/76/EU of 4 February 2013.

Table 2: Evolution of EU legislation on BSE surveillance by period (year and semester), surveillance target group as applied and implemented by the MS and non-MS between 2001 and 2015

Period	HS	FS, ES, AM	Country (MS and non-MS)	Legal provisions
2001 Jan–Jun	> 30[a]	> 30	AT, BE, DE, DK, EE, EL, ES, FI, FR, IE, IT, LU, NL, PT, SE, UK	Reg (EC) No 999/2001
2001 Jul–Dec	> 30	> 24	AT, BE, DE, DK, EE, EL, ES, FI, FR, IE, IT, LU, NL, PT, SE, UK	Reg (EC) No 1248/2001[c]
2002 Jan–Dec	> 30	> 24		
2003 Jan–Dec	> 30	> 24	AT, BE, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, SE, SI, UK	
2004 Jan–Dec	> 30	> 24	AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, SE, SI, SK, UK	
2005 Jan–Dec	> 30	> 24		
2006 Jan–Dec	> 30	> 24		
2007 Jan–Dec	> 30	> 24	AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, UK	
2008 Jan–Dec	> 30	> 24		
2009 Jan–Dec	> 48	> 48	AT, BE, CY, DE, DK, EL, ES, FI, FR, IE, IT, LU, NL, PT, SE, SI, UK	Dec 2008/908/CE[d]
2010 Jan–Dec				
2011 Jan–Dec	> 72	> 48	AT, BE, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, SE, SI, SK, UK	Dec 2011/358/CE[e]
2012 Jan–Dec				
2013 Jan–Dec	–	> 48	AT, BE, CY, CZ, DE, DK[b], EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, SE, SI, SK, UK	Dec 2013/76/CE[f]
2014 Jan–Dec				
2015 Jan–Dec				

–: Not Applicable; AM: ante mortem; ES: emergency slaughtered; FS: fallen stock; HS: healthy slaughtered.

(a): Age limits are expressed in months.

(b): The legal provision Dec 2013/76/EC came into force on the 1st Feb 2013. Denmark implemented this provision in July 2013. From Jan 2013–July 2013, Denmark tested HS > 72 randomly.

(c): Commission Regulation (EC) No 1248/2001 of 22 June 2001 amending Annexes III, X and XI to Regulation (EC) No 999/2001 of the European Parliament and of the Council as regards epidemio-surveillance and testing of transmissible spongiform encephalopathies OJ L 173, 27.6.2001, p. 12–22.

(d): 2008/908/EC: Commission Decision of 28 November 2008 authorising certain Member States to revise their annual BSE monitoring programme. OJ L 327, 5.12.2008, p. 24–26.

(e): 2011/358/EU: Commission Implementing Decision of 17 June 2011 amending Decision 2009/719/EC authorising certain Member States to revise their annual BSE monitoring programmes. OJ L 161, 21.6.2011, p. 29–33.

(f): 2013/76/EU: Commission Implementing Decision of 4 February 2013 amending Decision 2009/719/EC authorising certain Member States to revise their annual BSE monitoring programmes. OJ L 35, 6.2.2013, p. 6–7.

Table 3: Age limits of bovine animals tested for BSE surveillance applied in 2015 by the MS and surveillance target group

Member State	Surveillance target group					
	SU	FS	ES	AM	HS	EM
AT	No age limit	> 48[(a)]	> 24	> 24	No testing	No age limit
BE	No age limit	> 48	> 48	> 48	No testing	> 24
BG	No age limit	> 24	> 24	> 24	> 30	No age limit
CY	No age limit	> 48	> 48	> 48	No testing	> 48
CZ	No age limit	> 24	> 24	> 24	No testing	No age limit
DE	No age limit	> 48	> 48	> 48	No testing	No age limit
DK	No age limit	> 48	> 48	> 48	No testing	> 48
EE	No age limit	> 48	> 48	> 48	No testing	No age limit
EL	No age limit	> 48	> 48	> 48	> 72	No age limit
ES	No age limit	> 48	> 48	> 48	Born before 2001 and coming from flocks with BSE positive cases	No age limit
FI	No age limit	> 48	> 48	> 48	No testing	No age limit
FR	No age limit	> 24	> 24	> 24	Born after 2001	> 24
HR	No age limit	> 24	> 24	> 24	> 30	No age limit
HU	No age limit	> 24	> 24	> 24	No testing	No age limit
IE	No age limit	> 48	> 48	> 48	No testing	> 48
IT	No age limit	> 48	> 48	> 48	No testing	No age limit
LT	No age limit	> 48	> 48	> 48	No testing	No age limit
LU	No age limit	> 48	> 48	> 48	No testing	> 48
LV	No age limit	> 24	> 24	> 24	No testing	No age limit
MT	No age limit	> 48	> 48	> 48	No testing	No age limit
NL	No age limit	> 48	> 48	> 48	No testing	No age limit
PL	No age limit	> 48	> 48	> 48	> 96	> 48
PT	No age limit	> 48	> 48	> 48	No testing	No age limit
RO	No age limit	> 24	> 24	> 24	> 30	No age limit
SE	No age limit	> 48	> 48	> 48	No testing	No age limit
SI	No age limit	> 24	> 24	> 24	No testing	No age limit
SK	No age limit	> 24	> 24	> 24	No testing	No age limit
UK	No age limit	> 48	> 48	> 48	No testing	No age limit

SU: BSE suspected; FS: fallen stock; ES: emergency slaughtered; AM: ante mortem; HS: healthy slaughtered; EM: eradication measures.

(a): Age limits are expressed in months; in Austria, if surveillance target group is FS and animals are born in Romania, Bulgaria or Croatia the age limit is > 24.

1.2.2.1. Testing protocol for BSE surveillance in bovine animals

All samples intended to be examined for the presence of a TSEs in general shall be collected using the methods and protocols laid down in the latest edition of the Manual for diagnostic tests and vaccines for Terrestrial Animals of the World Organisation for Animal Health (OIE).

Samples from bovine animals sent for laboratory testing pursuant to the provisions of Annex III, Chapter A, Part I shall be examined by a rapid test. When the result of the rapid test is inconclusive or positive, the sample shall immediately be subjected to confirmatory examinations using at least one of the following methods and protocols laid down in the latest edition of the Manual (Figure 1).

Samples from bovine animals collected from suspect cases should immediately be subjected to confirmatory examinations using at least one of the following methods: immunohistochemistry (IHC), western blot (WB), demonstration of characteristic scrapie-associated fibrils (SAF) by electron microscopy, or histopathological examination and a combination of rapid tests. Rapid tests may be used for both primary screening and, if inconclusive or positive, subsequent confirmation according to the guidelines from the TSE European Union Reference Laboratory (EURL).

According to point 3.1(b) Chapter C Annex X, where the result of the primary screening is not confirmed by the subsequent rapid test, the sample must be subjected to an examination using one of the other confirmatory methods. Where histopathological examination is used for that purpose, but proves to be inconclusive or negative, the tissues must be submitted to further examination using one of the other confirmatory methods and protocols.
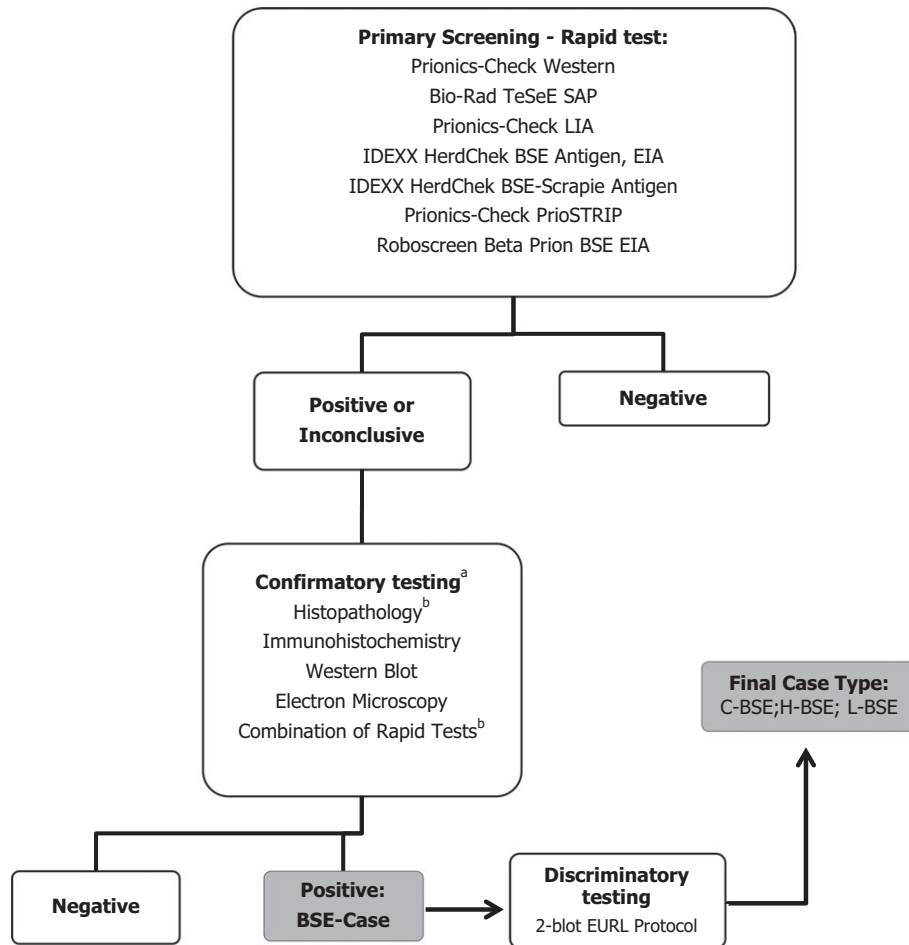
(a): Suspect cases should be immediately subjected to confirmatory examinations. (b): If histopathology is negative or inconclusive or if there is a discrepancy between rapid tests, a new examination with another confirmatory method is needed.

Figure 1: Testing protocol for bovine animals

Samples from all positive BSE cases should be forwarded to a laboratory for discriminatory testing of confirmed BSE cases, for the classification of bovine TSE isolates, according to point 3.1(a)(c) Chapter C Annex X of the TSE Regulation, as amended by Commission regulation 630/2013[5].

1.2.3. TSE surveillance of small ruminants

The surveillance of ovine and caprine animals for the presence of TSE is performed based on testing samples obtained from the following surveillance target groups:

- **Animals clinically suspected of being infected by a TSE (SU)**: Ovine and caprine live, slaughtered or dead animals that show or have shown neurological or behavioural disorders or a progressive deterioration of the general condition linked to impairment of the central nervous system and for which the information gathered on the basis of a clinical examination, response

[5] Commission Regulation (EU) No 630/2013 of 28 June 2013 amending the Annexes to Regulation (EC) No 999/2001 of the European Parliament and of the Council laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies Text with EEA relevance. OJ L 179, 29.6.2013, p. 60–83.

to treatment, a post-mortem examination or an ante- or post-mortem laboratory analysis do not allow an alternative diagnosis to be established (Article 3 1(h)of the TSE Regulation), and subject to the measures described in Articles 12 and 13 of the TSE Regulation.

- **Animals culled under TSE eradication measures (EM)**: In the case of a TSE-infected flock or herd where BSE cannot be excluded, all animals, embryos and ova identified by the inquiry shall be killed completely destroyed, without delay. When BSE and atypical scrapie (AS) can be excluded, and option 1 (killing and complete destruction or slaughtered for human consumption of all animals) has been applied, animals over 18 months of age that are killed for destruction shall be tested for the presence of TSE based on the selection of a simple random sample, in accordance with the sample size set in Annex III Chapter A, Section II Point 5. If derogations for killing and destruction are applied, all animals which are over 18 months of age slaughtered for human consumption shall be tested. When option 2 is applied (killing and complete destruction or slaughtered for human consumption of the susceptible animals only), after the genotyping of all ovine animals, a simple random sample of the animals over 18 months of age selected for killing and destruction shall be tested for the presence of TSE in accordance with the sample size set in Annex III Chapter A, Section II Point 5. If derogations for killing and destruction are applied, all animals which are over 18 months of age slaughtered for human consumption shall be tested.

- **Animals not slaughtered for human consumption (NSHC):** Ovine and caprine animals that have died or been killed, but which were not killed in the framework of a disease eradication campaign, or slaughtered for human consumption. Minimum sample sizes are set to take into account the size of the ovine populations in the individual MS and are intended to provide achievable targets (see Table 4).

  — In the case of an infected flock or herd where either option 1, 2, 3 or derogations (point 2.2.2 b ii and iii) have been applied, and during the intensified TSE testing programme for a period of 2 years or from the date of the detection of the last scrapie case, all animals (except ARR ovine animals) over the age of 18 months which have died or been killed on the holding but which were not killed in the framework of a disease eradication campaign must be tested for the presence of TSE.

- **Healthy animals slaughtered for human consumption (SHC):** The MS in which the population of ewes and ewe lambs put to the ram, in the case of sheep, or the population of goats that have already kidded and goats mated exceeds 750,000 animals shall test a minimum annual sample of 10,000 ovine and/or caprine animals slaughtered for human consumption (point 2(a) Section II Chapter A Annex III of the TSE Regulation) (see Table 4). The MS may choose to replace a maximum of 50% of its minimum sample size of ovine and caprine animals slaughtered for human consumption by testing dead ovine or caprine animals over the age of 18 months and a maximum of 10% of its minimum sample size of SHC and NSHC by testing ovine or caprine animals killed in the framework of a disease eradication campaign over the age of 18 months at the ratio of one to one.

  — In the case of an infected flock or herd where option 2 or derogations (point 2.2.2 b ii and iii) has been applied, and during the intensified TSE testing programme for a period of 2 years or from the date of the detection of the last scrapie case, animals which were kept in the holding at the time when the TSE case was confirmed, and which have been slaughtered for human consumption shall be tested for TSE.
  — In the case of an infected flock where option 3 (no mandatory killing and complete destruction of animals) or derogations (point 2.2.2 b ii and iii) have been applied, all of the animals which are over the age of 18 months (except ARR/ARR animals) which have been slaughtered for human consumption shall be tested for the presence of TSE.

Where the TSE case confirmed in a holding is an AS case, the holding shall be subject to the following intensified TSE surveillance protocol for a period of 2 years from the date of the detection of the last AS case: all ovine and caprine animals which are over the age of 18 months and slaughtered for human consumption and all ovine and caprine animals over the age of 18 months which have died or been killed on the holding shall be tested for the presence of TSE.

This classification of surveillance target groups has been used to outline the data in this report and to summarise historical data.

Table 4: TSE surveillance and control options in small ruminants, as defined in 2015 in the TSE regulation

	Ovine	Caprine
TSE suspects (SU)	All	All
Surveillance in holdings under TSE control and eradication measures (EM)	Different options of flock management are provided.	Different options of flock management are provided.
When BSE cannot be excluded	All animals > 18 months killed for destruction shall be tested for TSE.	All animals > 18 months killed for destruction shall be tested for TSE.
When BSE and atypical scrapie can be excluded	**Option 1**: Killing and complete destruction or slaughter for human consumption (SHC) of all animals. Animals > 18 months killed for destruction: a sample tested for TSE based on the actual number of animals killed. If derogations are applied: all animals > 18 months SHC shall be tested for the presence of TSE. **Option 2**: Killing and complete destruction of the susceptible animals only. Animals of selected genotypes killed for destruction > 18 months: a sample tested for TSE based on the actual number of animals killed. If derogations are applied: all animals > 18 months SHC shall be tested for the presence of TSE. **Option 3**: No mandatory killing and complete destruction of animals.	**Option 1**: Killing and complete destruction or SHC of all animals. Animals > 18 months killed for destruction: a sample tested for TSE based on the actual number of animals killed. If derogations are applied: all animals > 18 months SHC shall be tested for the presence of TSE. **Option 3**: No mandatory killing and complete destruction of animals.
Surveillance in ovine and caprine animals slaughtered for human consumption (SHC)		
Annual survey	Minimum sample size of animals > 18 months of age, if the population of ewes and ewe lambs put to the ram is > 750,000: 10,000	Minimum annual sample size of animals > 18 months of age, if the population of goats that have already kidded and goats mated is > 750,000: 10,000
When BSE and atypical scrapie can be excluded	After application of Option 2 and during a period of 2 years of TSE intensified monitoring: animals (except ARR/ARR) which were kept in the holding at the time when the TSE case was confirmed and which have been slaughtered for human consumption shall be tested for the presence of TSE. After application of Option 3 or derogations (point 2.2.2 b ii and iii) of option 2 and during a period of 2 years of TSE intensified monitoring: all animals > 18 months (except ARR/ARR) which have been slaughtered for human consumption must be tested for the presence of TSE.	After application of Option 3 and during a period of 2 years of TSE intensified testing of all animals > 18 months which have been slaughtered for human consumption.
When atypical scrapie is confirmed	During a period of 2 years of TSE intensified testing of all ovine animals > 18 months and slaughtered for human consumption.	During a period of 2 years of TSE intensified testing of all caprine animals > 18 months and slaughtered for human consumption.

	Ovine	Caprine
TSE suspects (SU)	**All**	**All**
Surveillance in ovine and caprine animals not slaughtered for human consumption (NSHC)		
Annual survey	Minimum sample size of dead ovine animals > 18 months of age, if the population of ewes and ewe lambs put to the ram is: > 750,000: 10,000 100,000–750,000: 1,500 40,000–100,000: 100% up to 500 < 40,000: 100% up to 100	Minimum sample size of dead caprine animals > 18 months of age, if the population of goats that have already kidded and goats mated is: > 750,000: 10,000 250,000–750,000: 1,500 40,000–250,000: 100% up to 500 < 40,000: 100% up to 100
When BSE and atypical scrapie can be excluded	In the case of an infected flock where either option 1, 2, 3 or derogations (point 2.2.2 b ii and iii) has been applied, during the 2-year period of TSE intensified monitoring: all animals (except ARR animals) > 18 months which have died or been killed on the holding but which were not killed in the framework of a disease eradication campaign shall be tested for the presence of TSE.	In the case of an infected flock where either option 1 or 3 has been applied, during the 2-year period of TSE intensified monitoring: all animals > 18 months which have died or been killed on the holding but which were not killed in the framework of a disease eradication campaign shall be tested for the presence of TSE.
When atypical scrapie is confirmed	During a period of 2 years of TSE intensified monitoring, all ovine animals > 18 months which have died or been killed on the holding.	During a period of 2 years of TSE intensified monitoring, all caprine animals > 18 months which have died or been killed on the holding.

TSE: transmissible spongiform encephalopathy.

Table 5: Minimum testing requirements for the TSE surveillance in small ruminants by the Member State in 2015

Member State	Sheep			Goats		
	Population size[a]	Surveillance target group		Population size[a]	Surveillance target group	
		SHC	NSHC		SHC	NSHC
AT	100–750	0	1,500	40–250	0	100% up to 500
BE	100–750	0	1,500	40–250	0	100% up to 500
BG	> 750	10,000	10,000	40–250	0	100% up to 500
CY	100–750	0	1,500	40–250	0	100% up to 500
CZ	100–750	0	1,500	< 40	0	100% up to 100
DE	> 750	10,000	10,000	40–250	0	100% up to 500
DK	40–100	0	100% up to 500	< 40	0	100% up to 100
EE	40–100	0	100% up to 500	< 40	0	100% up to 100
EL	> 750	10,000	10,000	> 750	10,000	10,000
ES	> 750	10,000	10,000	> 750	10,000	10,000
FI	40–100	0	100% up to 500	< 40	0	100% up to 100
FR	> 750	10,000	10,000	> 750	10,000	10,000
HR	100–750	0	1,500	40–250	0	100% up to 500
HU	> 750	10,000	10,000	< 40	0	100% up to 100
IE	> 750	10,000	10,000	< 40	0	100% up to 100

Member State	Sheep			Goats		
	Population size[a]	Surveillance target group		Population size[a]	Surveillance target group	
		SHC	NSHC		SHC	NSHC
IT	> 750	10,000	10,000	250–750	0	1,500
LT	40–100	0	100% up to 500	< 40	0	100% up to 100
LU	< 40	0	100% up to 100	< 40	0	100% up to 100
LV	< 40	0	100% up to 100	< 40	0	100% up to 100
MT	< 40	0	100% up to 100	< 40	0	100% up to 100
NL	100–750	0	1,500	250–750	0	1,500
PL	100–750	0	1,500	< 40	0	100% up to 100
PT	> 750	10,000	10,000	250–750	0	1,500
RO	> 750	10,000	10,000	> 750	10,000	10,000
SE	100–750	0	1,500	< 40	0	100% up to 100
SI	40–100	0	100% up to 500	< 40	0	100% up to 100
SK	100–750	0	1,500	< 40	0	100% up to 100
UK	> 750	10,000	10,000	40–250	0	100% up to 500

TSE: transmissible spongiform encephalopathy; SHC: slaughtered for human consumption; NSHC: Not slaughtered for human consumption.

(a): Population size is expressed in thousands.

1.2.3.1. Testing protocol for TSE surveillance in small ruminants

Samples from ovine and caprine animals sent for laboratory testing pursuant to the provisions of Annex III, Chapter A, Part II (Monitoring in ovine and caprine animals) shall be examined by a rapid test, in order to ensure the detection of all known strains of TSE. When the result of the rapid test is inconclusive or positive, the sampled tissues shall immediately be sent to an official laboratory for confirmatory examinations by histopathology, IHC, WB, characterisation of SAF by electron microscopy, as referred to in point (a). If the result of the confirmatory examination is negative or inconclusive, the tissues shall be submitted to a further examination by IHC or WB. If the result of one of the confirmatory examinations is positive, the animal shall be regarded as a positive TSE case and further examination as referred to in point (c) shall be performed (Figure 2).

Samples from ovine or caprine animals collected from suspect cases should immediately be subjected to confirmatory examinations using at least one of the following methods: IHC, WB, SAF or histopathological examination. Samples from routine monitoring should be examined using a rapid test, to ensure the detection of all known strains of TSE.

According to point 3.2(b) Chapter C Annex X, when the result of the rapid test is inconclusive or positive, the sampled tissues should be immediately sent to an official laboratory for confirmatory examinations by histopathology, IHC, WB or SAF. If the result of the confirmatory examination is negative or inconclusive, the tissues should be submitted to further examination by IHC or WB.

Samples from clinical suspect cases and from tested animals regarded as positive TSE cases, but which are not AS cases, or which display characteristics that are deemed by the testing laboratory to merit investigation, should be examined using a discriminatory WB method listed in the guidelines of the TSE EURL by an official diagnostic laboratory designated by the competent authority (point 3.2(c) Chapter C Annex X). TSE cases in which the presence of BSE cannot be excluded by the primary molecular testing referred should be submitted to further investigation and confirmation using at least one alternative method, differing immunochemically from the original primary molecular method.
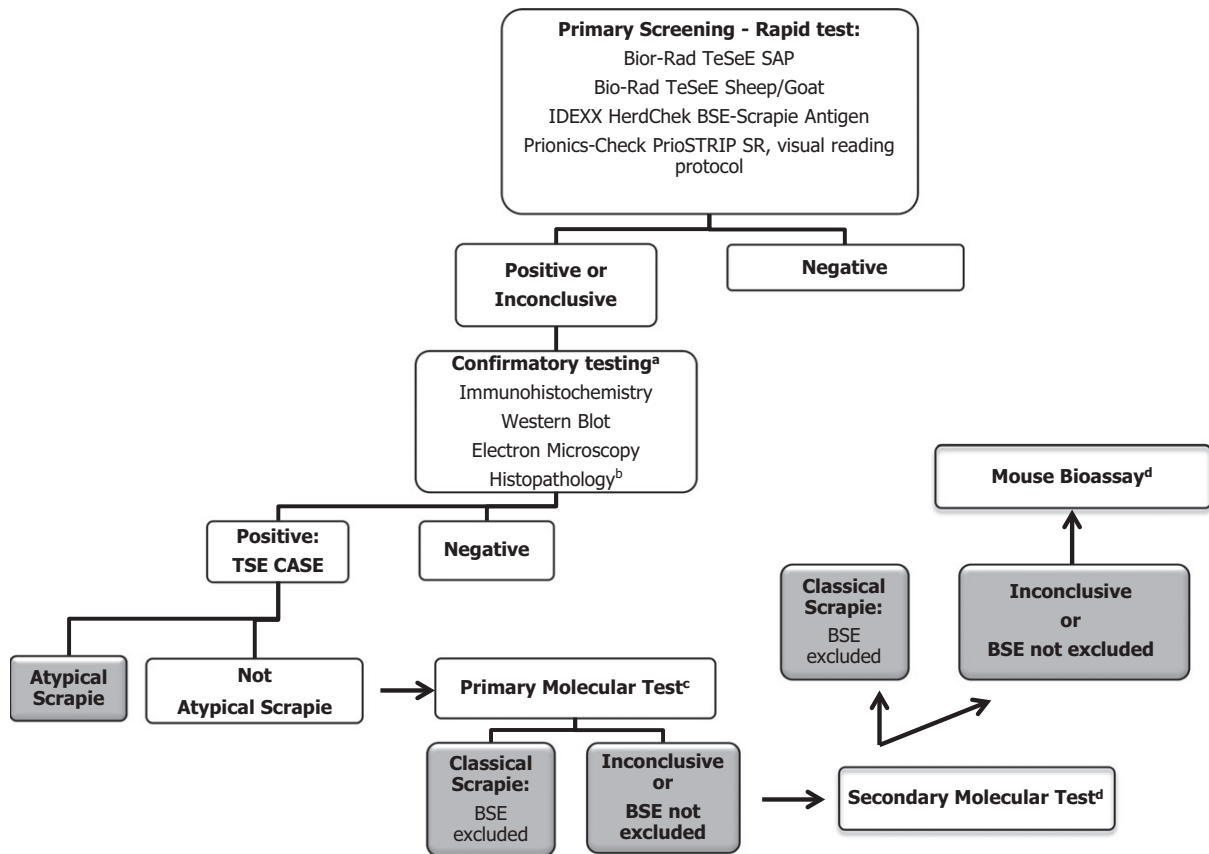
(a): Suspect cases will be immediately subjected to confirmatory examinations. (b): If histopathology is negative or inconclusive, further examination using another confirmatory method is needed. (c): Primary molecular test using discriminatory WB assays performed in National Reference Laboratories (NRL) or the TSE EURL. (d): Secondary molecular testing (repeat WB assays, discriminatory enzyme-linked immunosorbent assay (ELISA) and IHC) and possibly a mouse bioassay must be conducted in the EURL.

Figure 2: Testing protocol for small ruminants

The prion protein genotype for codons 136, 154 and 171 should be determined for all TSE-positive ovine animals. In addition, a minimum sample of ovine animals should be determined. In the case of MS with an adult sheep population of > 750,000 animals, this minimum sample should be at least 600 animals. In the case of other MS, the minimum sample should be at least 100 animals. The samples may be chosen from animals slaughtered for human consumption, from dead-on-farm animals or from live animals. The sampling should be representative of the entire ovine population (points 8.1 and 8.2 Section II Chapter A Annex III).

2. Data and methods

2.1. Origin of the data

The raw data consist of electronically submitted data by the MS and non-MS. The data that must be submitted consist of testing data and case-based data of bovine animals and small ruminants according to the reporting periods (monthly basis) as described in Chapter B.I of Annex III.

Electronically submitted data are stored in the EU database and can be consulted using business intelligence tools (Business Objects). The electronically submitted data were extracted from the EU database and further processed by EFSA in order to summarise the information and to elaborate the summary tables presented in the current EU annual report.

The remaining data (e.g. genotype data, bovine animals tested according the required age classes) were provided by the MS in their annual reports submitted in accordance with Article 6.4 of, and as specified in Chapter B.I Annex III to, the TSE Regulation.

Genotype data for positive scrapie ovine cases and for national representative sampling were retrieved from annual reports submitted by the MS. Data from both the cases and the sample of genotyped sheep were as described in Regulation (EC) 999/2001 Chapter A, Part II, point 8.1 or point 8.2. The annual reports were also used to validate the data retrieved on the surveillance activities carried out on species other than bovine, ovine and caprine animals.

Finally, information on population of small ruminants in 2015 as presented in Table 5 and the number of BSE cases worldwide as presented in Table 9 were obtained from the last available report on the monitoring and testing of ruminants for the presence of TSEs in the EU (European Commission, 2016) and OIE (http://www.oie.int/wahis).

The data in this report refer only to the samples collected and confirmed cases reported between 1 January 2015 and 31 December 2015 in the EU and in the additional three non-MS European Free Trade Association (EFTA) reporting countries (Iceland, Norway and Switzerland (including Lichtenstein)). EFSA validated the 2015 data by checking for inconsistencies between the data in the annual reports and the electronically extracted data, and by comparing the reported data with previous years. Consultation with data providers in the reporting countries was conducted during this validation.

For some tables and figures, historical data (period 2001–2015) were extracted from the EU TSE database. As certain MS and non-MS may calculate their annual statistics using different reporting criteria (e.g. based on the date of final test results rather than the date of sampling), the data in this report may differ slightly from the national figures published by the single MS for 2015. In addition, subsequent submissions of updated/amended data by the MS may have resulted in differences in the figures included in this report when compared with the same data presented in the previous EU summary reports.

2.2. Presentation of the data

The current report should be considered the EC summary report for 2015 in compliance with Section II Chapter B Annex III of the TSE Regulation.

The names of the countries are referred to the MS, if they are members of the EU 28, or to the non-MS countries when they belong to the EFTA reporting countries. The non-MS in this report are Iceland, Norway and Switzerland. The data regarding Switzerland contain those of Lichtenstein region. The countries are quoted in this report by using the country codes from the Nomenclature of Units for Territorial Statistics (NUTS) or the English name according to Regulation (EC) No 1059/2003[6].

For some tables and figures the surveillance target groups, mentioned in Sections 1.2.1 and 1.2.2, were combined into the following categories: FS, ES and AM in bovine animals are included in the group 'risk animals': the word 'risk' is used here to indicate those animals whose probability of detection of the disease is higher than in the surveillance target group HS. The risk animals do not refer to animals that experienced a higher level of exposure.

2.3. Methods

2.3.1. Descriptive methods

To describe the results of the TSE surveillance programme in the EU in 2015, a number of figures and tables have been produced along with a short narrative text to describe the main findings. The report is split into three sections: bovine animals (cattle), small ruminants (sheep and goats) and other species. Both aggregated data and individual data at the national level are presented. Where it was considered relevant, multiyear data are shown: surveillance data were available for the period 2001–2015 in bovine animals, for 2002–2015 in small ruminants and for 2015 in other species.

In the case of cattle, computations were based on the total number of tests performed in 2015 by the MS and surveillance target group, and historically since 2001, and the caseload (i.e. absolute number of cases) for the reporting year and historically, including a description of the BSE cases confirmed. Additional epidemiological parameters have been estimated, for example, absolute number of cases or proportions (cases per million tests) by case type (e.g. C-BSE, H-BSE, L-BSE) and/or surveillance target group, and proportions (cases per million of tests) by age class and by year, among

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[6] Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003 on the establishment of a common classification of territorial units for statistics (NUTS). OJ L 154, 21.6.2003, p. 1–41.

others. These have been used to describe the evolution of the BSE epidemic and to put into context the findings of the reporting year.

In order to obtain relevant epidemiological information about the BSE cases detected in 2015, EFSA requested, via a small questionnaire sent by e-mail, the concerned MS to provide additional information not submitted routinely by reporting countries for these cases.

To carry out an age-period analysis, the age-specific cases per million of tests over time were obtained for either C-BSE or atypical BSE (H- and L-type). The relevant denominators (number of tests over time by age class) were obtained in the following way: in the EU database, most information about the age of tested cattle was available as closed age classes (e.g. '24–35', '36–48' months, etc.) with exception for the first ('< 24 months') and the last classes (> 156 months). However, many data were affected by a large proportion of either missing or unspecific age classes as well as open age classes (e.g. '> 24' or '> 48' months). In order to make available age-specific denominators for the whole data set, an imputation technique was applied to all records with missing or not meaningful age classes. The following three-step technique was used:

1) The data set was split in two subdata sets, one containing the animals with missing or open age classes, and a second containing only animals with 1-year closed age classes.
2) Both data sets were divided into three periods according to the years in which the main changes in surveillance legislation has been enforced (Table 2): *period 1* from 2001 to 2008: cattle to be tested according to Reg (EC) No 999/2001 and 1248/2001, i.e. HS ≥ 30 months and at risk (FS, ES, AM) ≥ 24 months; *period 2* from 2009 to 2012: cattle to be tested according to Dec 2008/908/CE and Dec 2011/358/CE, i.e. HS ≥ 48 months during 2009–2010, ≥ 72 months during 2011–2012 and at risk (FS, ES, AM) ≥ 48 months; *period 3* from 2013 to 2015: cattle to be tested according to Dec 2013/76/CE, i.e. HS no test and at risk (FS, ES, AM) ≥ 48 months.
3) Finally, for each surveillance period, the age distribution observed in animals with closed age classes was used to assign the age class to cattle with missing or open age classes.

Different age classes were used in case of atypical BSE because the number of cases per year was much lower than the C-BSE cases. The number of cases was collapsed into 2-year age classes and number of tests in testing campaigns based on 2-year wide-bands. Since the number of years of BSE active surveillance are uneven (15), 2-year testing campaigns were obtained after disregarding the results for 2001, leading to the exclusion of two atypical cases that had been identified in the recent retrospective exercise using discriminatory tests.

Also, in the case of small ruminants, descriptive statistics were used to analyse the data and where possible descriptions and calculations were stratified according to the available variables in the database such as: surveillance target group (SHC, NSHC, SU, EM), flock status (infected, other, unknown, non-infected), surveillance activity (passive surveillance, i.e. restricted to SU, vs active surveillance, i.e. restricted to SHC and NSHC in non-infected flocks), country, year (since 2002), case type (i.e. classical scrapie (CS) or AS), index case (yes/no).

In order to see an evolution (period 2002–2015) in the number of CS cases over the number of AS cases, an annual ratio (CS/AS) was plotted for each MS. A correction was applied for those MS for which the numerator or denominator was equal to zero. In those cases, the ratio was replaced by a value calculated using the following formula: (CS + 0.5)/(AS + 0.5). No calculation was carried out for years in which neither CS nor AS were detected. A log scale was used for the *Y*-axis to include all surveillance target groups in the same figure.

Finally, the classification originally developed by the Great Britain's National Scrapie Plan (NSP) was used to summarise and describe the genotyping data. Moreover, in order to identify the evolution of the effect of breeding against resistance in some MS, the five NSP groups were recategorised in three groups, namely, resistant (homozygous ARR), semiresistant (heterozygous ARR except ARR/VRQ), and susceptible (non-ARR/VRQ).

2.3.2. Assumptions

In order to describe and plot the reported data, some assumptions were made for reporting the results in bovine animals and small ruminants (sheep and goats).

2.3.2.1. Bovine animals

To plot the temporal evolution of the BSE cases (C-BSE, L-BSE and H-BSE), the cases for which the type was reported as 'unknown' or were missing were assumed to be C-BSE since most of these cases were reported before 2005.

2.3.2.2. Small ruminants

In small ruminants, the following assumptions were considered:

- To plot the reported scrapie cases according to the flock status, it was assumed that flocks with reported status as 'unknown', 'other' or blank were assumed to have been reported as 'not- infected flocks'.
- To describe the evolution of the total number index cases of scrapie, it was assumed that all index cases (yes) were confirmed in non-infected flocks. If index case was reported as 'no' or 'unknown', these cases were assumed to have been reported as 'infected flocks'.
- To describe the results of the discriminatory testing in TSE, it was assumed that all scrapie cases with results (BSE-like, non-BSE-like, inconclusive) in the primary or secondary molecular tests have been submitted to discriminatory testing.

3. Assessment

3.1. BSE surveillance in bovine animals

Circa 114 million bovine animals were tested during the period 2001–2015. As shown in Figure 3, the number of bovine samples tested for BSE decreased year by year. In 2015, there was a reduction of nearly 40% in the total number of bovine samples tested compared with the previous year, from 2.3 to 1.4 million tests. This decrease is mostly due to a reduction in the number of animals tested in the HS target group: from 1,384,862 in 2014 to 491,052 in 2015 (Table 6). Changes in the EU legislation over time and its implementation at the national level explain an additional reduction in testing within the other surveillance target groups over the years, although at a lower scale.

The number of cattle tested for BSE per reporting country for each surveillance target group in 2015 is shown in Table 6. One-third of all samples tested was obtained from the HS surveillance target group. The number of tested bovine animals per MS and per age category for each of the target surveillance groups as well as the proportion of animals tested (at risk animals and HS) with relation to adult bovine animals population, are summarised in Appendix A (Tables A.1–A.5).

In 2015, five BSE cases in four different MS (Ireland, Slovenia, Spain and the UK) were reported from the 28 reporting MS. All cases were detected in the FS target group, in which 866,208 animals were tested. Two cases were confirmed as C-BSE, both were born after the EU-wide reinforcement of the feed ban in 2001 (BARB cases born in 2009 and 2010). The remaining three cases were atypical BSE (two H-BSE and one L-BSE). The atypical cases were detected in old animals (all > 144 months), whereas the two C-BSE cases were of the age classes 60–71 and 72–83 months.

In 2015, one BSE case was detected in one non-MS (Norway). This case was detected in the FS target group and was atypical (H-BSE).

BSE cases by type, age and country are summarised in Table 7.
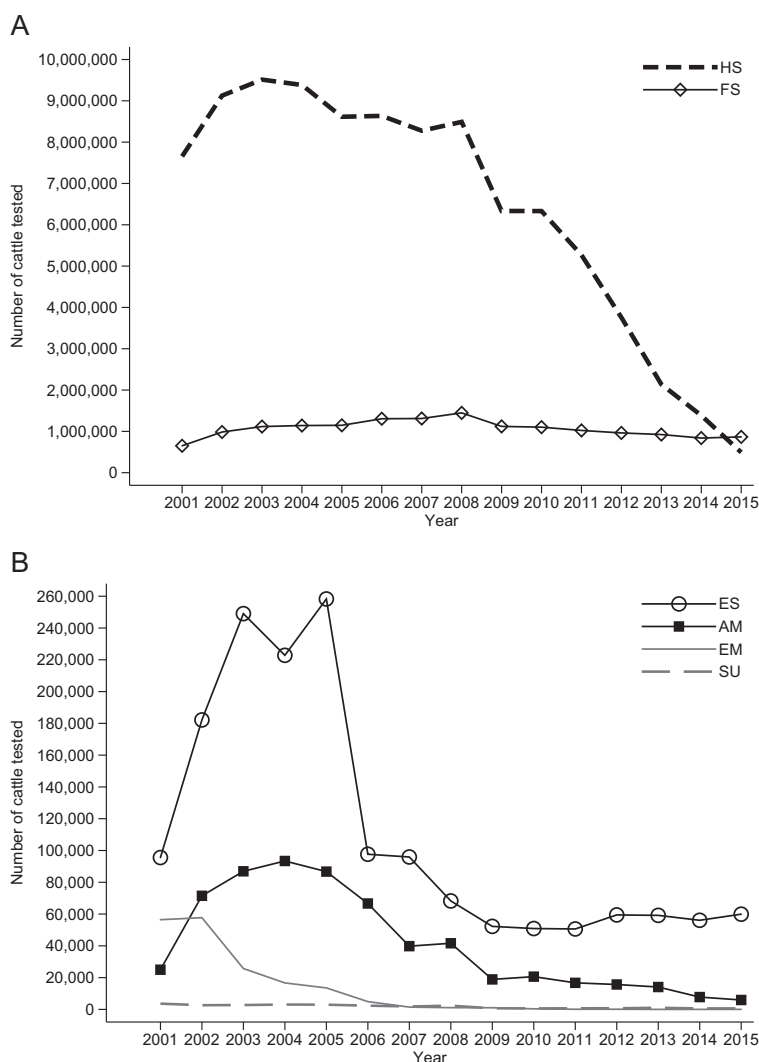
The figure does not include: data from Norway, Switzerland and Iceland that reported ca 270,000 tests between 2003 and 2015; 1,500 animals tested in 2003 and submitted to rapid testing without a clear indication of the target group. HS: healthy slaughtered; FS: fallen stock; ES: emergency slaughtered; AM: ante mortem; EM: eradication measures; SU: BSE suspected.

Figure 3: Total number of bovine animals tested for BSE in the EU over the period 2001–2015 by surveillance target group. (A) surveillance target groups HS and FS; (B) surveillance target groups ES, AM, EM and SU

Table 6: Number of bovine animals tested for BSE by reporting country and surveillance target group in 2015 in the EU and other reporting countries

Country	Surveillance target group						Total
	SU	HS	ES	AM	FS	EM	
AT	25	5,167	2,803	64	12,949	0	21,008
BE	34	236	795	2	23,658	0	24,725
BG	3	14,024	1,243	1	823	0	16,094
CY	0	0	0	0	949	0	949
CZ	3	10	1,008	1	19,073	0	20,095
DE	500	67,019	8,285	1	143,095	0	218,900
DK	3	33	1,112	0	18,366	0	19,514
EE	0	1	102	51	3,479	0	3,633

Country	Surveillance target group						Total
	SU	HS	ES	AM	FS	EM	
EL	0	11,486	16	0	1,535	0	13,037
ES	3	258	405	32	59,742	2	60,442
FI	0	10	41	0	11,525	0	11,576
FR	1	61,848	14,124	0	192,502	5	268,480
HR	2	22,100	361	0	6,982	0	29,445
HU	6	531	242	21	11,640	0	12,440
IE	0	0	2	877	50,567	0	51,446
IT	0	642	12,359	727	41,261	0	54,989
LT	0	0	246	0	3,458	0	3,704
LU	2	0	0	0	2,203	0	2,205
LV	2	0	82	789	2,427	0	3,300
MT	0	0	59	0	141	0	200
NL	0	199	4,879	0	45,321	0	50,399
PL	12	184,427	4,076	440	33,866	0	222,821
PT	1	507	1,765	1,914	17,374	0	21,561
RO	48	122,379	1,551	16	2,469	0	126,463
SE	1	0	215	38	9,825	0	10,079
SI	12	78	529	136	8,196	1	8,952
SK	0	1	73	4	7,891	0	7,969
UK	0	96	3,563	810	134,891	42	139,402
Total EU	658	491,052	59,936	5,924	866,208	50	1,423,828
CH	28	0	4,930	0	6,804	0	11,762
IS	0	66	0	0	9	0	75
NO	0	1	5,075	48	1,657	0	6,781
Total EFTA	28	67	10,005	48	8,470	0	18,618
Total	**686**	**491,119**	**69,941**	**5,972**	**874,678**	**50**	**1,442,446**

BSE: bovine spongiform encephalopathy; SU: BSE suspected; HS: healthy slaughtered; ES: emergency slaughtered; AM: ante mortem; FS: fallen stock; EM: eradication measures.

Table 7: Number of BSE cases by type, age class and reporting country[a] reported in 2015 in the EU and other reporting countries

Country	Age (months)	BSE type			Total
		C-BSE	H-BSE	L-BSE	
IE	60–71	1	0	0	1
ES	> 155	0	0	1	1
SI	144–155	0	1	0	1
UK	72–83	1	0	0	2
	144–155	0	1	0	0
Total EU		2	2	1	5
NO	> 155	0	1	0	1
Total EFTA		**2**	**3**	**1**	**6**

C-BSE: classical bovine spongiform encephalopathy; L-BSE: L-type bovine spongiform encephalopathy; H-BSE: H-type bovine spongiform encephalopathy.
(a): Discriminatory testing was performed in all cases and was used for the categorisation of C-BSE, L-BSE and H-BSE.

Epidemiological information relating to the positive cases, e.g. the presence of clinical symptoms, herd size, herd type, animal and feed type was collected and is summarised in Table 8. This additional information was obtained by a small questionnaire sent to the reporting officers of the implicated countries.

Table 8: Clinical and epidemiological description of the BSE cases detected in four MS and one non-MS in 2015

Information	SI	UK1	UK2	ES	IE	NO
Surveillance target group	Fallen stock	Fallen stock	Fallen stock	Fallen stock	Fallen stock	Fallen stock
Case type	H-BSE	H-BSE	C-BSE	L-BSE	C-BSE	H-BSE
Month and year of birth	March 2003	June 2003	May 2009	January 2001	January 2010	June 1999
Clinical symptoms	Paresis	–	–	None	Animal had been recumbent after falling and had been euthanised. Reduced milk yield prior to falling; reduced body condition	–
Cattle/herd type	Mixed (dairy and beef)	Dairy	Dairy	Beef	Dairy	–
Breed	CIKA (Slovene autochthonous breed)	Limousin	Holstein Friesian	Conjunto mestizo	Rotbunt	–
Confirmation natal herd	No	Yes	Yes	Yes	Yes	–
Location (NUTS3) farm where case was detected	Farm of birth: Zabukovje, Dolenjska region, Slovenia	UKJ1/England	UKL1/Wales	Region: Extremadura Municipality: Portaje Country: Spain	County Louth	–
Herd size	13	273	160	447	Approximately 250	–
Feed during first year of life	Corn meal, mineral feed, grass and hay	Coarse mix and adult concentrates	Adult concentrates	Mixed	Whole milk, concentrates, forages and grass fed in first year	–
Testing of offspring/cohorts: number tested and results	Eight offspring, among them only one female tested for BSE/negative result, three females are still alive; four males were slaughtered at < 30 months of age and were not tested on BSE	1 tested/0 positive	1 tested/0 positive	–	4 offspring tested, 0 positive; 63 cohorts tested, 0 positive	–
Testing of sire	Information not available	Not tested	Not tested	–	Sire was an artificial insemination bull who was still alive at the time of the case	–
Testing of dam	Tested with negative result	Not tested	Not tested	Negative	Negative for BSE at healthy slaughter	–

–: no information available; Norway could not provide the requested epidemiological information.
H-BSE: H-type bovine spongiform encephalopathy; C-BSE: classical bovine spongiform encephalopathy; L-BSE: L-type bovine spongiform encephalopathy.

In relation to C-BSE and compared with the two previous years (two C-BSE cases in 2013 and three in 2014), there was no apparent difference in either the absolute number of cases (Figure 4 and Table 9) or the proportion of cases per million tests (Figure 5). The overall decreasing trend of C-BSE in the EU and worldwide has reached a phase of very low occurrence, with eight cases of C-BSE reported in the last 3 years.
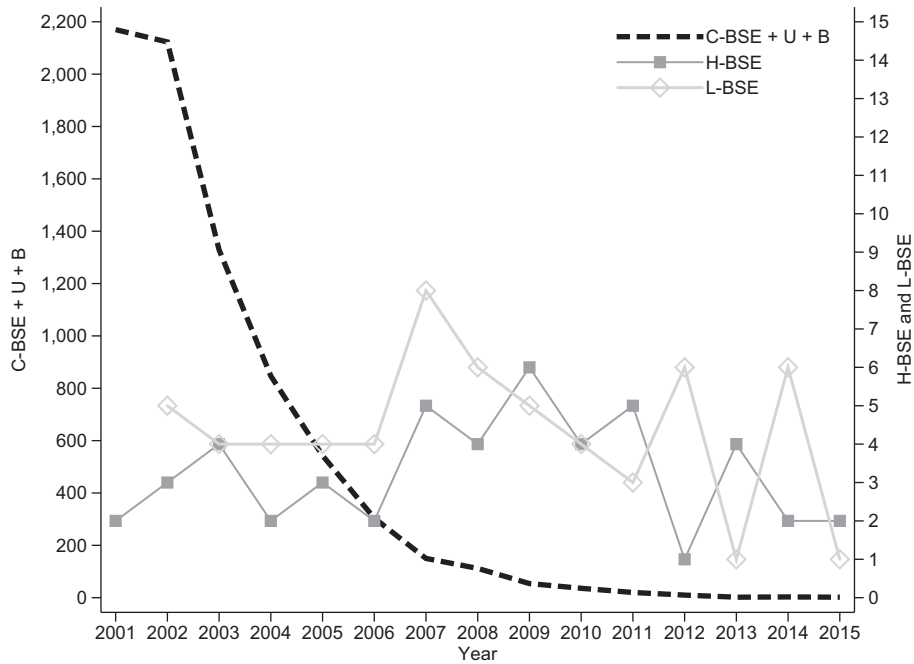
One case from Poland in 2012 that was reported as 'atypical' is not included in the figure. Cases reported as unknown (U) or blank/missing (B) were combined with C-BSE cases. Left *y*-axis: C-BSE + U + B. Right *y*-axis: L- to H-BSE and L-BSE. The figure does not include data from the non-MS: Norway (1 case), Switzerland (467 cases)) over the same period.

Figure 4: Number of BSE cases by type over the period 2001–2015 in the EU

Table 9: Number of reported and detected BSE cases worldwide by year and by country since 1987

Country	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
AT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	2	1 (0/1)	0	0	2 (1/1)	0	0	0	0	0
BE	0	0	0	0	1	0	0	0	0	0	1	6	3	9	46	38	15	11	3	1	0	0	0	0	0	0	0	0	0
CZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	7	8	3	2 (1/0)	0	2	0	0	0	0	0	0
DE	0	0	0	0	0	1	0	3	0	0	2	0	0	7	125	106 (0/1)	54 (0/1)	65 (1/0)	32	16	4	2	2	0	0	0	0	2 (1/1)	0
DK	0	0	0	0	0	1	0	0	0	0	0	0	0	1	6	3	2	1 (0/1)	1	0	0	0	1	0	0	0	0	0	0
EL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES	0	0	0	0	0	0	0	0	0	0	0	0	0	2	83	134	173 (1/0)	138	103	76 (1/0)	33 (0/1)	24 (1/1)	18 (2/2)	13	7 (1/0)	6 (1/2)	0	2 (0/1)	1 (0/1)
FI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FR	0	0	0	0	5	0	1	4	3	12	6	18	31	162	277 (1/0)	240 (2/1)	111 (3/1)	51 (0/1)	32 (0/1)	8 (0/2)	7 (1/1)	8 (2/3)	10 (2/2)	5 (2/1)	3	1 (0/1)	2 (2/0)	3 (1/2)	–
IE	0	0	15	14	17	18	16	19	16	74	80	83	95	149	242	334 (1/0)	183	126	73	38	25	22	9	3 (1/0)	3 (1/0)	3	1 (1/0)	0	1
IT	0	0	0	0	0	0	0	2	0	0	0	0	0	0	50	36 (0/1)	31 (0/1)	7	8	7	2 (0/1)	1	2 (0/1)	0	1 (0/1)	0	0	0	0
LU	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0	0	2	2	2	2	19 (1/0)	24 (0/1)	19 (0/1)	6	3	2	2	1	0	3 (0/1)	0	0	0	0	0
PL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4 (0/1)	5	11 (0/2)	20 (0/2)	10 (1/1)	9 (0/2)	4 (1/0)	2	2	1 (0/1)	3 (0/2)(a)	1 (0/1)	0	0
PT	0	0	0	1	1	1	3	12	15	31	30	127	159	150	110	86	133	92 (1/0)	53 (2/0)	32	13 (1/0)	19 (2/0)	6	5 (1/0)	5	2	0	1	0
RO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2 (0/2)	0
SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	1 (1/0)	1	0	0	0	0	0	0	0	1 (1/0)
SK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6	2	7	3	0	2	1	0	1	0	0	0	0	0
UK	442	2,514	7,228	14,407	25,359	37,301	35,090	24,436	14,562	8,149	4,393	3,235	2,301	1,441	1,203	1,123	610	330	208 (1/1)	129 (0/1)	65 (2/2)	42 (0/2)	11 (1/0)	11 (0/1)	8 (1/1)	3 (0/1)	3 (1/0)	1	2 (1/0)

Country	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total EU	442	2,514	7,243	14,422	25,382	37,322	35,110	24,476	14,596	8,266	4,515	3,471	2,591	1,923	2,172	2,138	1,343	854	551	326	166	125	65	44	28	18	7	11	5
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1 (1/0)	0
Canada	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	5	3	4	1	1	1	0	0	0	1
Israel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Japan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	4	5	7	10	3	1	1	0	0	0	0	0	0
Liechtenstein	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 (1/0)
Switzerland	0	0	0	2	8	15	29	64	68	45	38	14	50	33	42	24	21	3	3	5	0	0	0	0	2	1 (1/0)	0	0	0
United States	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0
Total rest of the world	0	0	0	2	8	15	30	64	68	45	38	16	50	33	45	27	27	9	12	21	6	5	2	1	3	3	0	1	2
Total	442	2,514	7,243	14,424	25,390	37,337	35,140	24,540	14,664	8,311	4,553	3,487	2,641	1,956	2,217	2,165	1,370	863	563	347	172	130	67	45	31	21	7	12	7

Source: Data regarding the non-EU cases and cases in EU MS for the period 1987–2002 were made available by the European Commission (European Commission, 2016). The BSE case in Sweden was an H-type (Gavier-Widen et al., 2008); The BSE cases in USA (H-type in 2005 and 2006; L-type in 2012) were retrieved from OIE website (http://www.oie.int/wahis); One case from Poland in 2012 was classified simply as 'atypical' and therefore has not been included in the table. Each cell reports the total number of BSE cases with the number of H-type and L-type in parentheses (H-type/L-type): Countries without BSE cases (Bulgaria, Cyprus, Estonia, Croatia, Hungary, Lithuania, Latvia and Malta) are not reported.
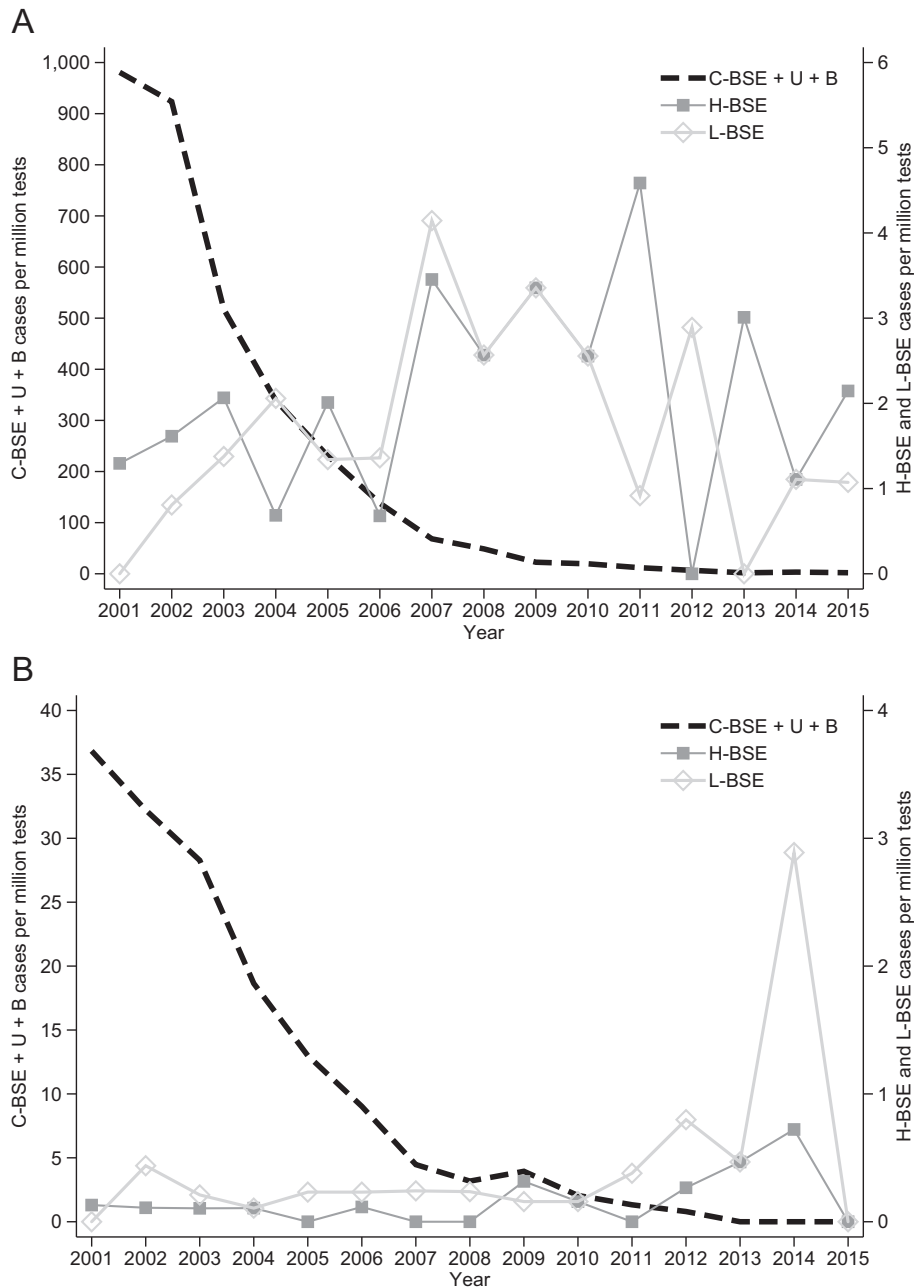
Left *y*-axis: C(Classical)-BSE + U(Unknown) + B(Blank). Right *y*-axis: Atypical BSE (H-BSE and L-BSE).

Figure 5: Proportion (cases per million tests) of animals testing positive for BSE by case type and separately by surveillance target group over the period 2001–2015 in the EU: (A) at risk animals (FS, ES and AM); (B) HS

With regard to atypical BSE, there is a low occurrence of both H-type and L-type over time. Because of the introduction of mandatory discriminatory testing and the retrospective discriminatory testing of cases, 96.6% of all cases confirmed between 2003 and 2015 have been subject to discriminatory testing. In total, 621 cases (18%) remain with unknown status (Table 10). The total number of atypical BSE cases reported by the 31 reporting countries, during the period 2003–2015 was 100 (2.8% of all cases subject to discriminatory testing): 45 H-type and 55 L-Type. In 2015, three cases were reported: two H-type cases in Slovenia and the UK, respectively, and one L-type case in Spain.

Table 10: Number and proportion of BSE cases subject to discriminatory testing, by case type for the period 2003–2015 in the EU and other reporting countries

Country	Total BSE cases[a]	Cases submitted to discriminatory testing by type						Percentage of total BSE cases	Cases not submitted to discriminatory testing
		Atypical (case type not defined)	H-BSE	L-BSE	C-BSE	Unknown & Blank	Total		
AT	7	0	1	2	4	0	7	100	0
BE	30	0	0	0	19	11	30	100	0
CZ	26	0	1	0	21	4	26	100	0
DE	177	0	2	2	167	5	176	99.4	1
DK	5	0	0	1	2	2	5	100	0
ES	594	0	7	8	513	46	574	96.6	20
FR	241	0	13	15	200	13	241	100	0
IE	486	0	3	0	145	338	486	100	0
IT	56	0	0	3	53	0	56	100	0
LU	1	0	0	0	1	0	1	100	0
NL	36	0	0	2	33	0	35	97.2	1
PL	71	1	2	11	57	0	71	100	0
PT	361	0	7	0	249	8	264	73.1	97
RO	2	0	0	2	0	0	2	100	0
SE	1	0	1	0	0	0	1	100	0
SI	7	0	1	0	6	0	7	100	0
SK	16	0	0	0	15	1	16	100	0
UK	1,423	0	7	9	1,214	193	1,423	100	0
Total EU	**3,540**	**1**	**45**	**55**	**2,699**	**621**	**3,421**	**96.6**	**119**
NO	1	0	1	0	0	0	1	100	0
Total EFTA	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**100**	**0**

H-BSE: H-type bovine spongiform encephalopathy; L-BSE: L-type bovine spongiform encephalopathy; C-BSE: classical bovine spongiform encephalopathy.

(a): The table includes only cases for the period 2003–2015 and only for the MS that reported cases; one case from Poland in 2012 reported as 'atypical' has not been included. Data start from 2003, when the discriminatory testing of BSE cases became mandatory. Categories for case type: L-BSE, H-BSE, C-BSE, Unknown and Blank (missing data).

Considering the year of birth of all reported and confirmed C-BSE cases, it is clear from Figure 6 that the peak in the number of confirmed cases was reached in the 1995 birth cohort. Assuming that exposure to the BSE agent occurs mainly during the first year of life, this means that exposure to the BSE agent started to decline in the EU in the mid-1990s.
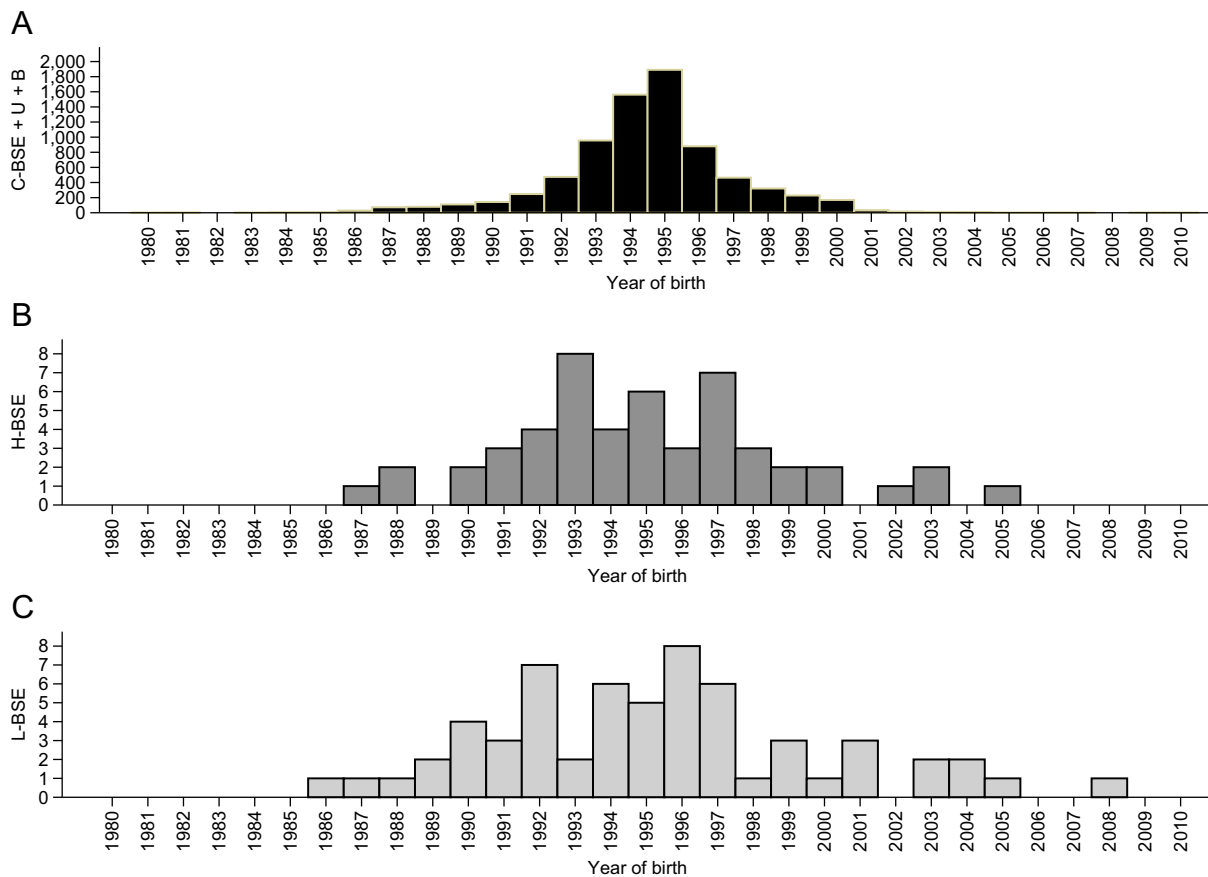
(A) C-BSE (including Unknown and Blank) (B) H-BSE. C: L-BSE; Cases from Norway (one in 2015, born in 1999) and Switzerland are not included as well as one case from Poland in 2012 that was classified just as 'atypical' and two cases whose year of birth was reported as '1950'. The scale used on the Y-axis is different for Figure 6A compared to Figure 6B and Figure 6C.

Figure 6: Number of BSE cases by case type and annual birth cohort reported in the period 2001–2015 in the EU and other reporting countries

In addition, the age of the individual cases was used to better describe the trend in the C-BSE epidemic and more in particular for the 'risk animals'. Figure 7A shows the evolution of the age-specific proportion of C-BSE cases (i.e. cases per million tests) among 'risk animals' over subsequent annual testing campaigns from 2001 to 2015 in the EU. Each line shows the prevalence of cases per million tests in each age class and testing year.

Two main patterns are observed in Figure 7A when considering the different annual testing campaigns. First, from 2002 onwards, there is a decrease in the occurrence of the disease, as shown by the lower peak in the number of cases per million tests by test year. Second, there is an increase in the prevalence of older age classes in subsequent years, as shown by the progressive shift towards the right-hand side of the chart.

Age-specific graphs for atypical H-type BSE (Figure 7B) and atypical L-type BSE (Figure 7C) are shown for comparison. Because of the lower number of atypical cases, it is not possible to observe similar patterns in the figures.
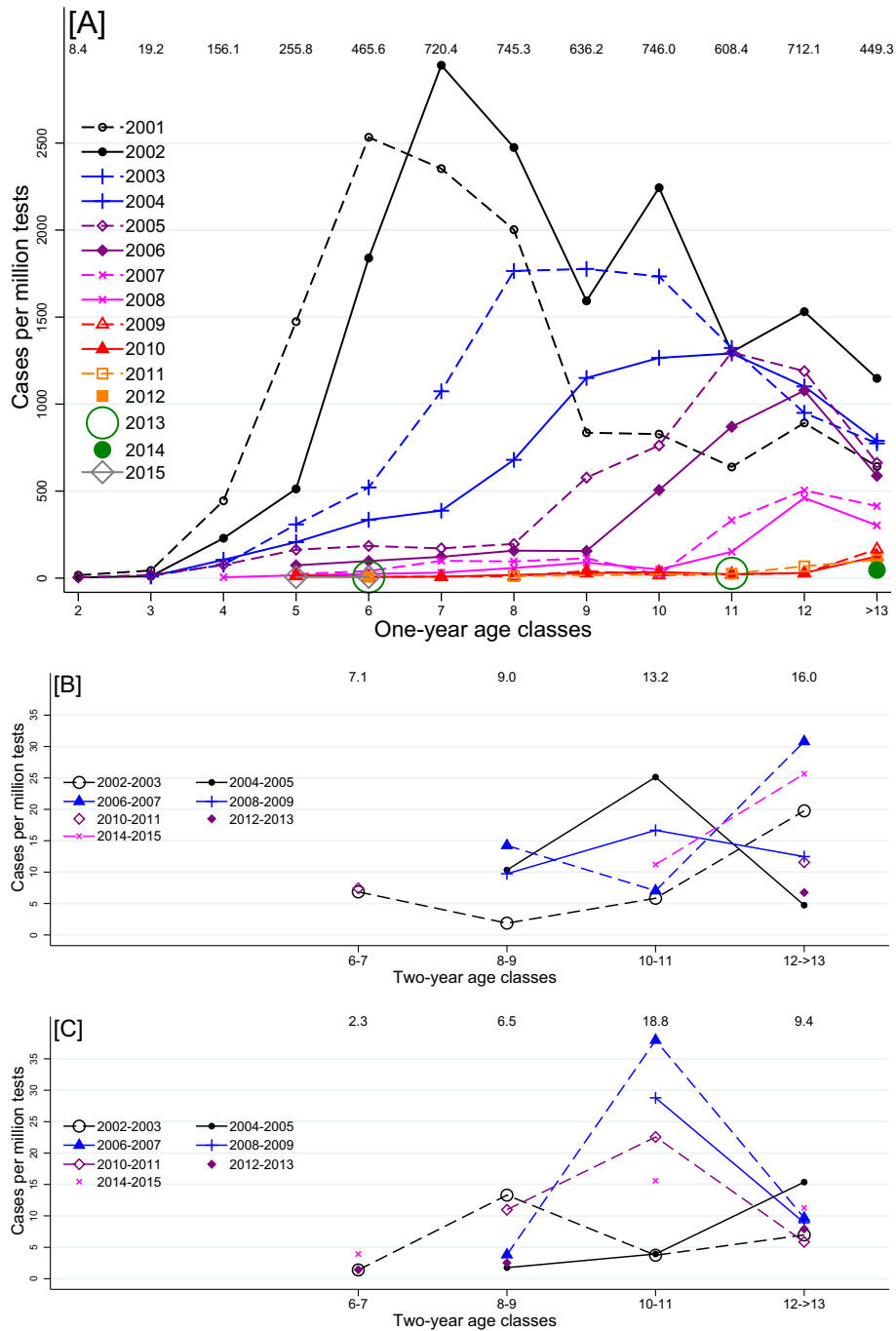
(A) C-BSE. Cases and tests are restricted to the 'at-risk' target groups (combining FS, ES and AM) in which the detected occurrence of C-BSE was highest. Lines refer to annual testing campaigns. (B) H-BSE data. (C) L-BSE data. For Figure 7B and Figure 7C, lines refer to 2-year testing campaigns and the age classes spanned 2 years. The overall proportion of cases per million tests per each age class for all testing years combined is also displayed at the top of the figure (e.g. in Figure 7: 255.8 cases per million tests performed on all bovine animals of age class 5 (years) over the period 2001–2015 followed by 465.6 cases per million tests in the age class 6, etc.).

Figure 7: Proportion of BSE cases by type, age and testing campaign detected during the period 2001–2015 in the EU and other reporting countries

Assuming that new cases of BSE may re-emerge over time, particular attention should focus on cases occurring in young animals. Figure 8 shows the number of BSE cases (all types) in cattle < 60 months of age and provides information of (re)emergence of BSE in this young age group. Since 2008, no cases have been detected in the age class < 60 months.
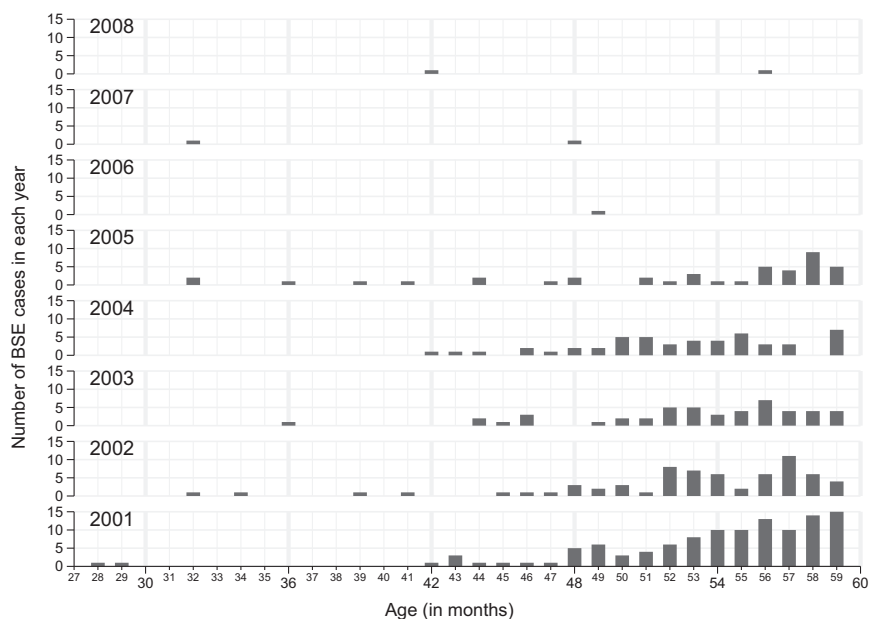
Figure 8: Number of BSE cases in cattle < 60 months of age by year of detection in 2015 in the EU and other reporting countries

3.2.   TSE surveillance in small ruminants

Since 2002, around 8.4 million small ruminants have been tested for TSEs in the EU. After a peak in 2006 due to changes in the TSE Regulation, the overall number of sheep and goats tested for TSE has decreased continuously over time (Figures 9 and 10). In 2015, a total of 319,638 sheep and 135,857 goats were tested. Among non-infected flocks in both species, there is a decreasing trend in the number of sheep and goats notified as clinical suspects and tested as TSE suspects (SU target group). This highlights both the decrease in the number of clinical cases and the lower awareness of scrapie among stakeholders. The same trend can be observed for sheep and goats tested in the EM target group. However, it is not clear whether there is a misclassification in the database due to the large number of flocks with status 'unknown' and 'other' and the fact that there were in the past a number of animals reported as tested in the target group of eradication measures but sourced from non-infected flocks.

Differences between the MS with relation to the number of tested animals during 2015 have been summarised in Tables 11 and 12. Due to the differences in the size of the small ruminant population, the national surveillance efforts differ across reporting countries. Taking into account the number of samples tested in the target groups SHC and NSHC, and those required according to the TSE regulation (Table 5), 24 and 25 MS fulfilled the requirements in sheep and goats, respectively.
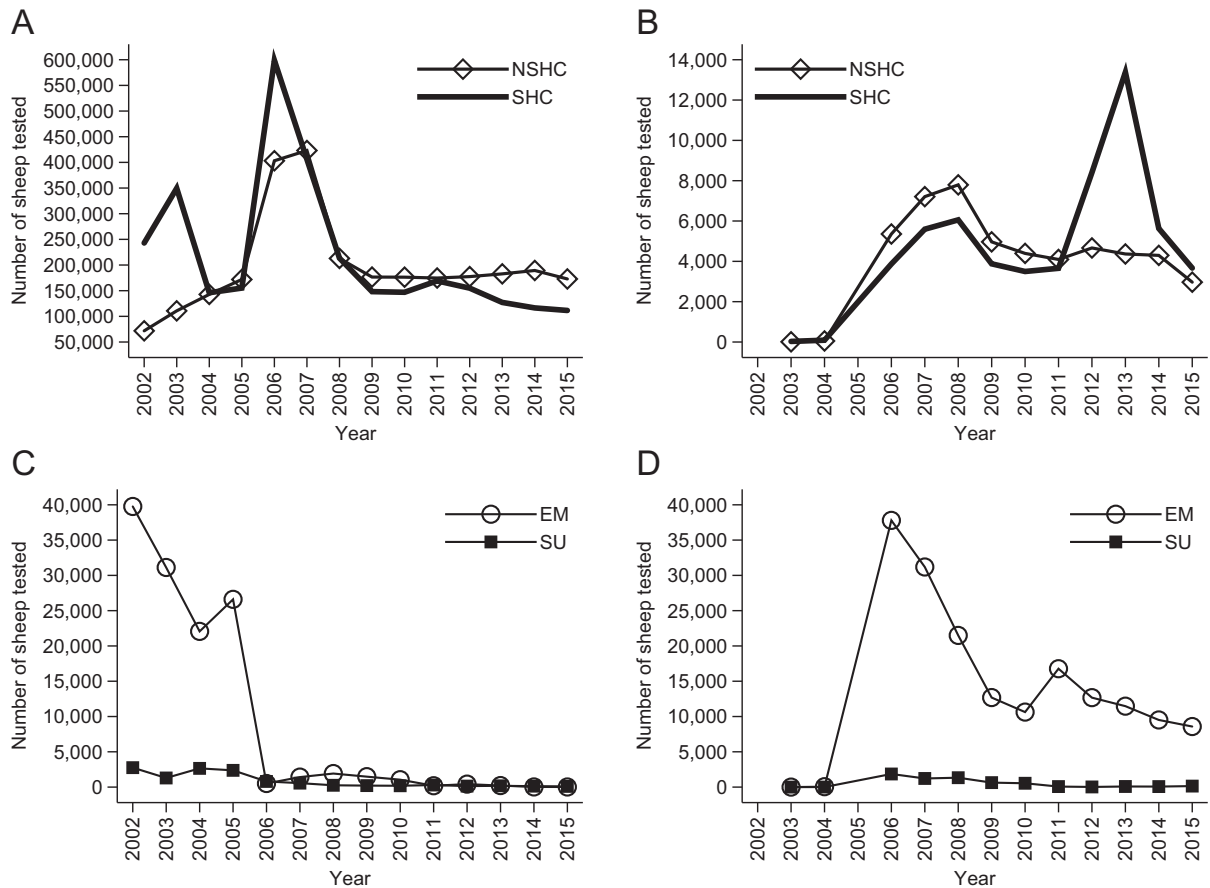
(A and C) Non-infected flocks, including 'Other' or 'Unknown'. (B and D) TSE-infected flocks EM: eradication measures; NSHC: not slaughtered for human consumption; SHC: slaughtered for human consumption; SU: TSE suspected. 341 samples that had a surveillance target group reported as 'Active monitoring/surveillance' (2004 and 2005) and 4,925 samples (2003 and 2005) that had a surveillance target group reported as 'Others' were not included. Data from Norway, Switzerland and Iceland are not included.

Figure 9: Number of sheep tested for TSEs by surveillance target group and flock status in the period 2002–2015 in the EU
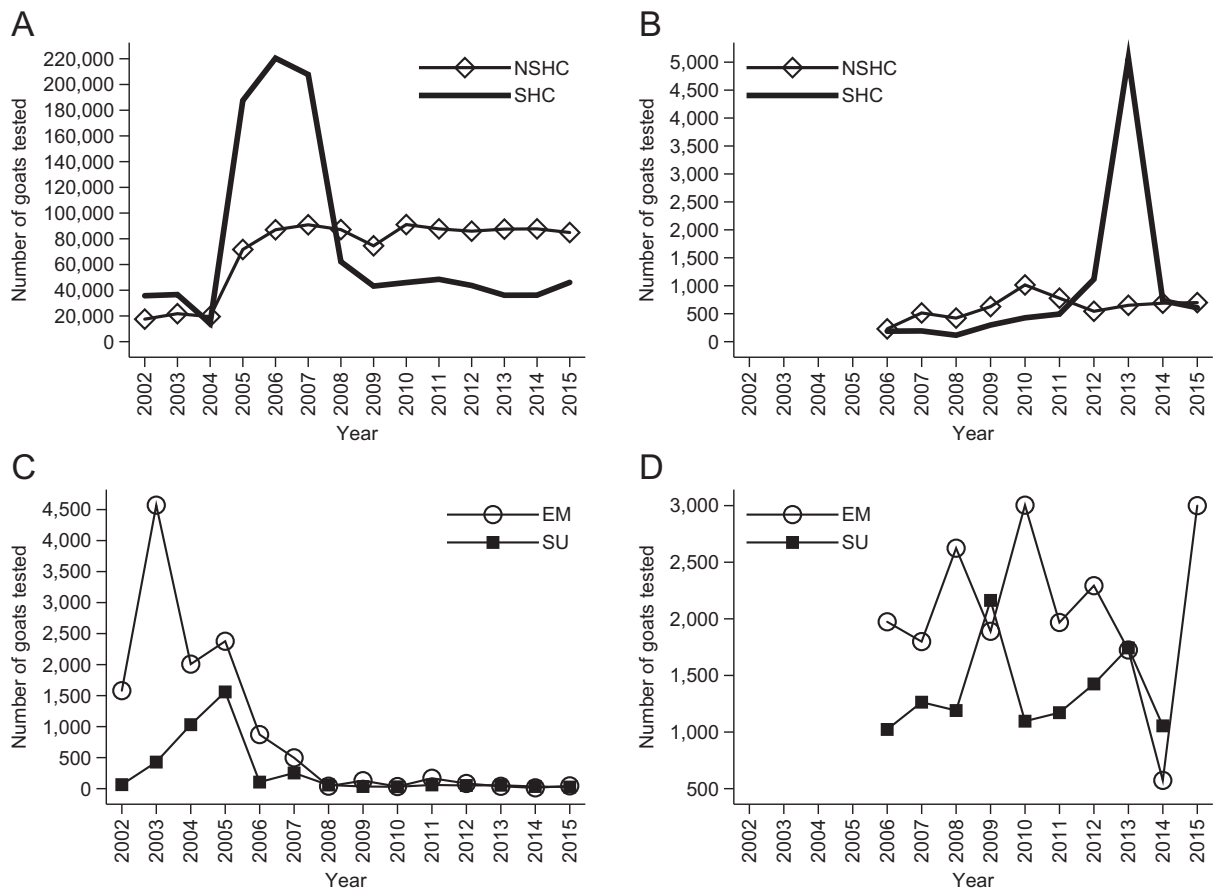
(A and C) Non-infected flocks, including 'Other' or 'Unknown'. (B and D) TSE-infected flocks. 4,251 samples that had a surveillance target group reported as 'Active monitoring/surveillance' (2004 and 2005) and 725 samples (2003) that had a surveillance target group reported as 'Others' were not included. Data from Norway, Switzerland and Iceland are not included.

Figure 10: Number of goats tested for TSEs by surveillance target group and flock status in the period 2002–2015 in the EU

Table 11: Number of sheep tested for TSEs by reporting country, surveillance target group and flock status in 2015 in the EU and other reporting countries

Surveillance target group / Flock status	TSE-infected flocks					Other flocks[a]					Unknown[a]				
	EM	NS HC	SHC	SU	Total	EM	NSHC	SHC	SU	Total	EM	NS HC	SHC	SU	Total
AT	0	0	12	0	12	0	4,704	113	0	4,817	0	3	0	0	3
BE	0	0	0	0	0	0	0	0	0	0	0	1,601	0	1	1,602
BG	0	0	0	0	0	0	1,434	8,604	0	10,038	0	0	0	0	0
CY	0	0	0	0	0	0	6,269	3,356	0	9,625	0	0	0	0	0
CZ	0	0	0	0	0	0	2,438	373	0	2,811	0	0	0	0	0
DE	0	0	0	0	0	101	0	0	0	0	0	10,511	7,453	35	18,100
DK	0	0	0	0	0	0	661	0	1	662	0	0	0	0	0
EE	0	0	0	0	0	0	0	0	0	0	0	227	0	0	227
EL	1,560	565	573	65	2,763	0	1,664	549	2	2,215	0	1,037	1,721	11	2,769
ES	4,371	0	0	0	4,371	0	12,547	8,044	0	20,591	0	0	0	0	0
FI	0	0	4	0	4	0	1,320	2	0	1,322	0	0	0	0	0
FR	222	4	108	0	334	0	29,898	10,342	3	40,243	0	0	0	0	0
HR	0	0	0	0	0	0	1,617	1	0	1,618	0	0	0	0	0
HU	0	674	142	0	816	0	7,250	7,688	1	14,939	0	0	0	0	0
IE	156	114	268	0	538	0	108	0	0	108	0	11,001	10,424		21,425
IT	2,258	324	246	0	2,828	0	11,051	9,633	0	20,704	0	0	0	0	0
LT	0	0	0	0	0	20	995	4,693	0	5,688	0	0	0	0	0
LU	0	0	0	0	0	0	97	0	0	97	0	0	0	0	0
LV	0	0	0	0	0	0	141	0	2	143	0	0	0	0	0
MT	0	0	0	0	0	0	169	114	0	283	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0	0	0	1,506	0	0	1,506
PL	0	0	0	0	0	0	8,370	10,825	1	19,196	0	0	0	0	0
PT	0	0	0	0	0	0	0	0	0	0	0	15,120	6,383	0	21,503
RO	5	53	1,542	80	1,680	0	5,695	14,438	27	20,160	0	1,019	1,220	8	2,247
SE	0	0	0	0	0	0	6,623	0	0	6,623	0	0	0	0	0
SI	0	7	0	0	7	0	922	0	0	922	0	0	0	0	0
SK	0	654	754	0	1,408	0	11,084	1	0	11,085	0	0	0	0	0
UK	10	572	19	0	601	0	15,810	5,488	3	21,301	0	0	0	0	0

Flock status	TSE-infected flocks					Other flocks(a)					Unknown(a)				
Surveillance target group	EM	NS HC	SHC	SU	Total	EM	NSHC	SHC	SU	Total	EM	NS HC	SHC	SU	Total
Total EU	8,582	2,967	3,668	145	15,362	20	130,867	84,264	40	215,191	101	42,025	27,201	55	69,382
CH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IS	112	0	0	0	112	0	0	0	0	0	0	0	5,217	55	5,272
NO	0	0	0	0	0	141	5,500	8,672	6	14,319	0	0	0	0	0
Total EFTA	112	0	0	0	112	141	5,500	8,672	6	14,319	0	0	5,217	55	5,272
Total sheep	8,694	2,967	3,668	145	15,474	161	136,367	92,936	46	229,510	101	42,025	32,418	110	74,654

–: no surveillance performed; TSE: transmissible spongiform encephalopathy; EM: eradication measures; NSHC: not slaughtered for human consumption; SHC: slaughtered for human consumption; SU: TSE suspected.

(a): The 'Other' and 'Unknown' are assumed to be non-TSE-infected flocks.

Table 12: Number of goats tested for TSEs by reporting country, surveillance target group and flock status in 2015 in the EU and other reporting countries

Flock status	TSE-infected flocks					Other flocks(a)					Unknown(a)				
Surveillance target group	EM	NSHC	SHC	SU	Total	EM	NSHC	SHC	SU	Total	EM	NSHC	SHC	SU	Total
AT	0	0	0	0	0	0	1,460	27	0	1,487	0	0	0	0	0
BE	0	0	0	0	0	0	0	0	0	0	0	657	0	0	657
BG	0	0	0	0	0	0	274	1,220	0	1,494	0	0	0	0	0
CY	580	0	0	0	580	0	5,659	4,972	0	10,631	0	0	0	0	0
CZ	0	0	0	0	0	0	317	10	0	327	0	0	0	0	0
DE	0	0	0	0	0	0	0	0	0	0	6	1,301	301	4	1,612
DK	0	0	0	0	0	0	109	0	0	109	0	0	0	0	0
EE	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18
EL	215	17	200	0	432	0	526	394	0	920	0	295	628	0	923
ES	497	0	0	0	497	0	8,813	8,791	4	17,608	0	0	0	0	0
FI	0	0	0	0	0	0	149	0	0	149	0	0	0	0	0
FR	666	79	218	0	963	0	48,725	9,160	0	57,885	0	0	0	0	0
HR	0	0	0	0	0	0	508	0	0	508	0	0	0	0	0
HU	0	0	0	0	0	0	127	59	0	186	0	0	0	0	0
IE	0	0	0	0	0	0	98	0	0	98	0	10	0	0	10
IT	606	57	149	0	812	39	6,745	15,232	0	22,016	0	0	0	0	0
LT	0	0	0	0	0	0	13	152	0	165	0	0	0	0	0
LU	0	0	0	0	0	0	99	0	0	99	0	0	0	0	0
LV	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
MT	0	0	0	0	0	0	125	97	0	222	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0	0	0	1,496	0	0	1,496
PL	0	0	0	0	0	0	2,711	202	0	2,913	0	0	0	0	0
PT	0	0	0	0	0	0	0	0	0	0	0	1,534	345	0	1,879
RO	0	16	14	0	30	0	1,696	4,145	5	5,846	0	335	357	2	694
SE	0	0	0	0	0	0	149	0	0	149	0	0	0	0	0
SI	0	0	0	0	0	0	272	0	0	272	0	0	0	0	0
SK	0	0	0	0	0	0	162	0	0	162	0	0	0	0	0
UK	432	530	32	0	994	0	522	0	11	533	0	0	0	0	0

Flock status	TSE-infected flocks					Other flocks[a]					Unknown[a]				
Surveillance target group	EM	NSHC	SHC	SU	Total	EM	NSHC	SHC	SU	Total	EM	NSHC	SHC	SU	Total
Total EU	2,996	699	613	0	4,308	39	79,260	44,461	20	123,780	6	5,646	1,631	6	7,289
CH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO	0	0	0	0	0	0	467	14	0	481	0	0	0	0	0
Total EFTA	0	0	0	0	0	0	467	14	0	481	0	0	0	0	0
Total goats	2,996	699	613	0	4,308	39	79,727	44,475	20	124,261	6	5,646	1,631	6	7,289

–: no surveillance performed; TSE: transmissible spongiform encephalopathy; EM: eradication measures; NSHC: not slaughtered for human consumption; SHC: slaughtered for human consumption; SU: TSE suspected.

(a): The 'Other' and 'Unknown' are assumed to be non-TSE-infected flocks.

Table 13: TSE cases by species, country, case type, index case status, surveillance target group in 2015 in the EU and other reporting countries

Species: Sheep

Country	AS No EM	AS No NSHC	AS No SHC	AS No Total	AS Yes NSHC	AS Yes SHC	AS Yes Total	AS Total	CS No EM	CS No NSHC	CS No SHC	CS No SU	CS No Total	CS Yes EM	CS Yes NSHC	CS Yes SHC	CS Yes SU	CS Yes Total	CS Unk No EM	CS Unk Yes SHC	CS Unk Total	Total
AT	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CY	0	0	0	0	0	0	0	0	0	12	0	0	12	0	1	0	0	1	0	0	0	13
CZ	0	0	0	0	3	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
DE	0	0	0	0	8	2	10	10	0	0	0	0	0	0	1	0	0	1	0	0	0	11
EL	0	0	0	0	1	1	2	2	98	8	4	34	144	0	31	9	4	44	0	0	0	190
ES	0	0	0	0	7	5	12	12	61	0	0	0	61	0	8	0	0	8	0	0	0	81
FR	0	0	0	0	3	2	5	5	0	0	0	0	0	0	0	0	1	1	0	0	0	6
HR	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HU	0	1	0	1	7	6	13	14	0	0	0	0	0	0	0	0	0	0	0	0	0	14
IE	0	0	0	0	5	2	7	7	0	0	0	0	0	0	1	0	0	1	0	0	0	8
IT	0	0	0	0	3	3	6	6	96	0	0	0	96	0	18	8	0	26	18	1	19	147
PL	0	0	0	0	8	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8
PT	0	0	1	1	21	8	29	30	0	0	0	0	0	0	0	0	0	0	0	0	0	30
RO	0	0	0	0	0	0	0	0	4	0	6	64	74	1	3	4	16	24	0	0	0	98
SE	0	0	0	0	3	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
SI	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
SK	0	0	0	0	2	1	3	3	0	0	2	0	2	0	1	0	0	1	0	0	0	6
UK	0	2	0	2	6	9	15	17	0	0	0	0	0	0	2	0	0	2	0	0	0	19
Total EU	**0**	**3**	**1**	**4**	**81**	**39**	**120**	**124**	**259**	**20**	**12**	**98**	**389**	**1**	**66**	**21**	**21**	**109**	**18**	**1**	**19**	**641**
CH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
IS	0	0	0	0	0	1	1	1	24	0	0	0	24	0	0	0	5	5	0	0	0	30
NO	0	0	0	0	3	7	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Total EFTA	**0**	**0**	**0**	**0**	**3**	**8**	**11**	**11**	**24**	**0**	**0**	**0**	**24**	**0**	**0**	**0**	**5**	**5**	**0**	**0**	**0**	**–**
Total sheep	**0**	**3**	**1**	**4**	**84**	**47**	**131**	**135**	**283**	**20**	**12**	**98**	**413**	**1**	**66**	**21**	**26**	**114**	**18**	**1**	**19**	**681**

Column groups: AS = Atypical Scrapie (Index case No: EM, NSHC, SHC, Total; Index case Yes: NSHC, SHC, Total; Total). CS = Classical Scrapie (Index case No: EM, NSHC, SHC, SU, Total; Index case Yes: EM, NSHC, SHC, SU, Total; Unknown: No EM, Yes SHC, Total). Final column = Total.

Goats

Case type	Atypical Scrapie							Classical Scrapie										Unknown				Total
Index case	No				Yes			No					Yes					No	Yes		Total	
Surveillance target group	EM	NSHC	SHC	Total	NSHC	SHC	Total	EM	NSHC	SHC	SU	Total	EM	NSHC	SHC	SU	Total	EM	EM	SHC		
Country																						
BG	0	0	0	**0**	0	0	**0**	0	0	0	0	**0**	0	0	1	0	**1**	0	0	0	**0**	**1**
CY	1	0	0	**1**	0	0	**0**	494	290	122	0	**906**	0	15	2	0	**17**	0	0	0	**0**	**924**
EL	0	0	0	**0**	1	0	**1**	13	0	0	0	**13**	0	8	0	0	**8**	0	0	0	**0**	**22**
ES	0	0	0	**0**	2	3	**5**	13	0	0	0	**13**	0	2	1	0	**3**	0	0	0	**0**	**21**
FR	0	0	0	**0**	5	0	**5**	37	0	0	0	**37**	0	1	1	0	**2**	0	0	0	**0**	**44**
IT	0	0	0	**0**	1	0	**1**	17	0	0	0	**17**	0	1	3	0	**4**	0	0	0	**0**	**22**
RO	0	0	0	**0**	0	0	**0**	0	0	0	0	**0**	0	0	0	1	**1**	0	0	0	**0**	**1**
SI	0	0	0	**0**	1	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	**0**	**1**
UK	0	0	0	**0**	0	0	**0**	5	7	0	3	**15**	0	0	0	1	**1**	0	0	0	**0**	**16**
Total EU	**1**	**0**	**0**	**1**	**10**	**3**	**13**	**579**	**297**	**122**	**3**	**1,001**	**0**	**27**	**8**	**2**	**37**	**0**	**0**	**0**	**0**	**1,052**
Total goats	**1**	**0**	**0**	**1**	**10**	**3**	**13**	**579**	**297**	**122**	**3**	**1,001**	**0**	**27**	**8**	**2**	**37**	**0**	**0**	**0**	**0**	**1,052**

–: no surveillance performed; TSE: transmissible spongiform encephalopathy; EM: eradication measures; NSHC: not slaughtered for human consumption; SHC: slaughtered for human consumption; SU: TSE suspected.

As a result of the TSE surveillance programme in the 28 reporting MS, a total of 641 and 1,052 scrapie cases were reported in 2015 in sheep and goats, respectively. In addition, 40 cases of scrapie in sheep were reported by the two non-MS: 30 cases in Iceland and 10 cases in Norway. Of the 641 cases of scrapie in sheep, 124 were AS (19.4%), 498 were CS (77.7%) and 19 were of unknown type (2.9%). In goats, only 14 cases (1.3%) were declared atypical.
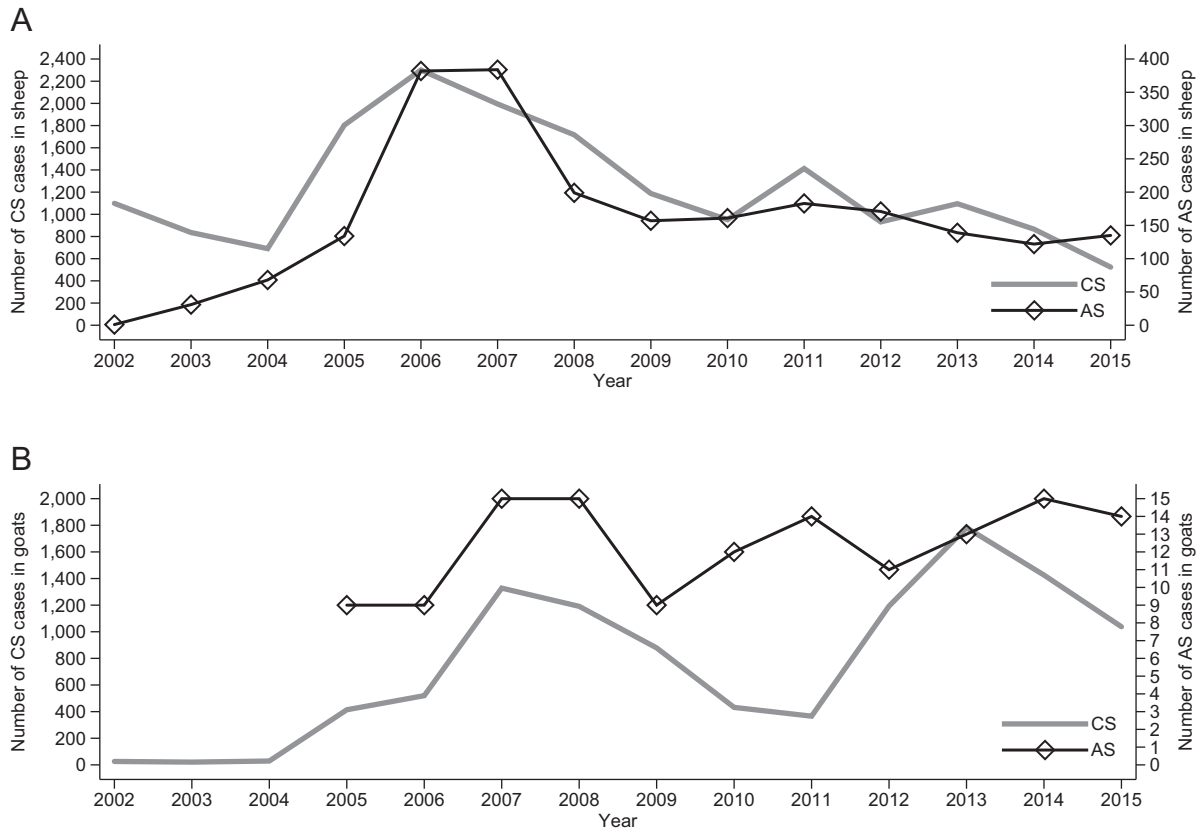
Left-hand y-axis: C(classical)S(scrapie); Right-hand y-axis: A(atypical)S(scrapie). In total, 452 cases in sheep (429 CS and 23 AS reported by 12 MS and 1 non-MS) and 178 TSE cases in goats (177 CS and 1 AS reported by 5 MS) could not be included in this figure because these cases could not be extracted from the database (August 2016). In sheep, these cases were distributed as follows: 1 case in 2001, 3 cases in 2003, 2 cases in 2004, 3 cases in 2005, 245 cases in 2006, 6 cases in 2007, 25 cases in 2008, 1 case in 2009, 12 cases in 2010, 3 cases in 2011, 3 cases in 2012, 2 cases in 2013 and 146 cases in 2014. In goats, these cases were distributed as follows: 7 cases in 2006, 30 cases in 2007, 49 cases in 2008, 16 cases in 2009 and 2010, 8 cases in 2011, 26 cases in 2012, 13 cases in 2013 and 11 cases in 2014.

Figure 11: Number of scrapie TSE cases reported in (A) sheep and (B) goats by case type in the period 2002–2015 in the EU

In absolute numbers, CS is the most frequently reported type of scrapie in the EU. The relative proportion of AS to CS (after excluding the cases of Cyprus) in sheep is double compared to goats (0.21 and 0.10, respectively).

CS was reported in sheep by 10 different MS (and in Iceland) and in goats by eight MS (Table 13). AS was reported in sheep by 16 different MS plus two non-MS (Iceland and Norway) and in goats from six MS. A total of 516 of all sheep scrapie cases in the EU (80.5%) were reported by four countries, namely, Greece, Italy, Romania and Spain.

The unusually high number of cases in goats compared with sheep is explained by the large epidemic of scrapie in Cyprus, because 924 out of the 1,052 cases in 2015 were reported by Cyprus, with only 17 cases reported as index cases. This is lower than the number of cases reported by Cyprus in 2014 (1,364 scrapie cases in goats and 26 are reported as index cases).

A

B
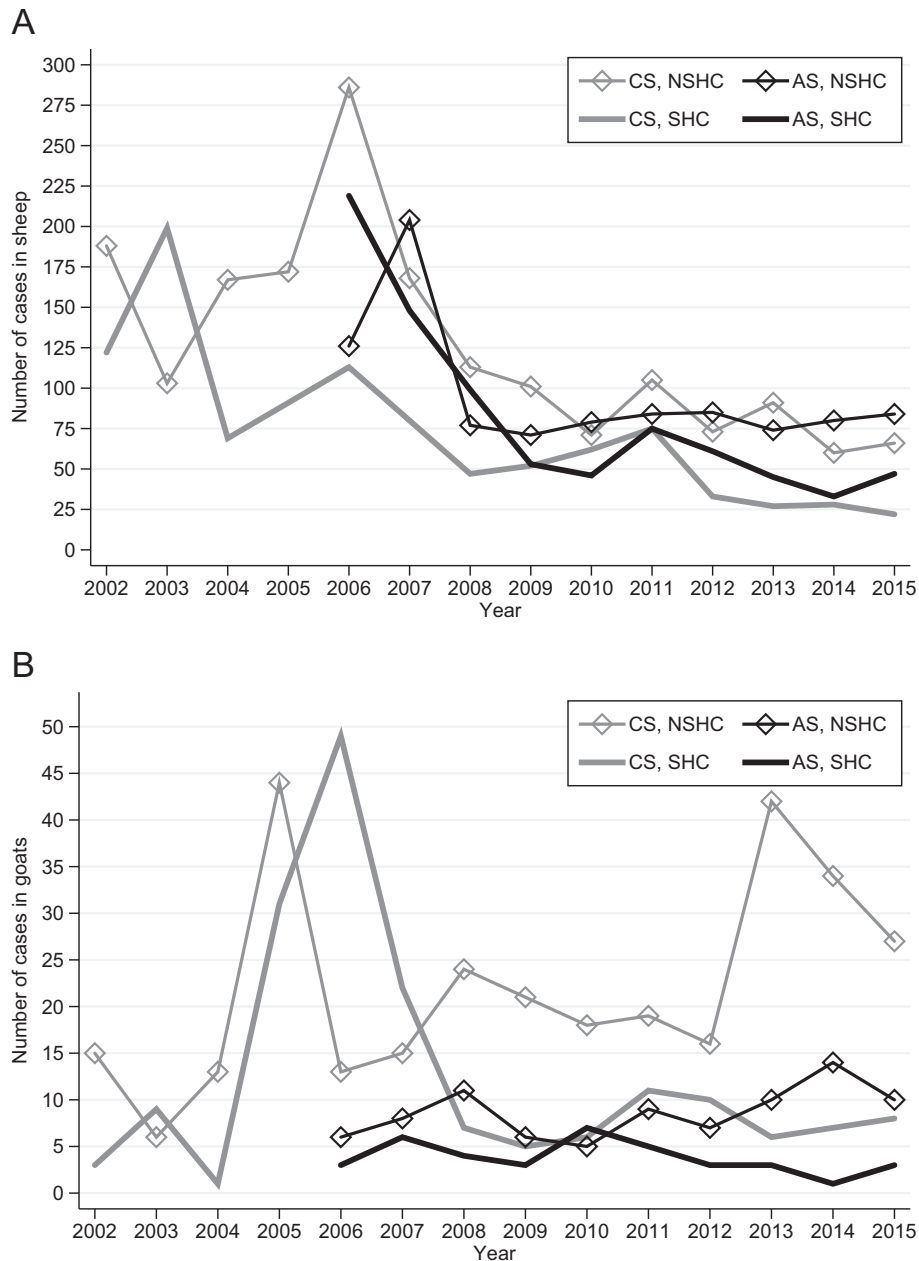
(A) Sheep (B) Goats. Data on AS cases detected before 2006 have been excluded as few MS were using rapid testing able to identify this TSE type. In order to plot the number of scrapie cases in non-infected flocks, it was assumed that – based on the index case information (yes/no) – cases indicated as Index = 'Yes' are from non-infected flocks or not previously known as infected while 'No', 'Unknown' and 'Missing' information on index cases were assumed to be tested from flocks already known to be infected. In sheep, 148 cases (106 cases from NSHC and 42 cases from SHC of which 51 and 10, respectively, were from non-infected flocks) could not be included in this figure as these cases could not be extracted from the data base (August 2016); In goats, 156 cases (109 cases from NSHC and 47 from SHC of which four and 43, respectively, were from non-infected flocks) could not be included in this figure as these cases could not be extracted from the data base (August 2016).

Figure 12: Total number of scrapie cases in (A) sheep and (B) goats in the period 2002–2015 in non-infected flocks by case type and surveillance target group (restricted to NSHC and SHC) in the EU. NSCH: not slaughtered for human consumption; SHC: slaughtered for human consumption; CS: classical scrapie; AS: atypical scrapie
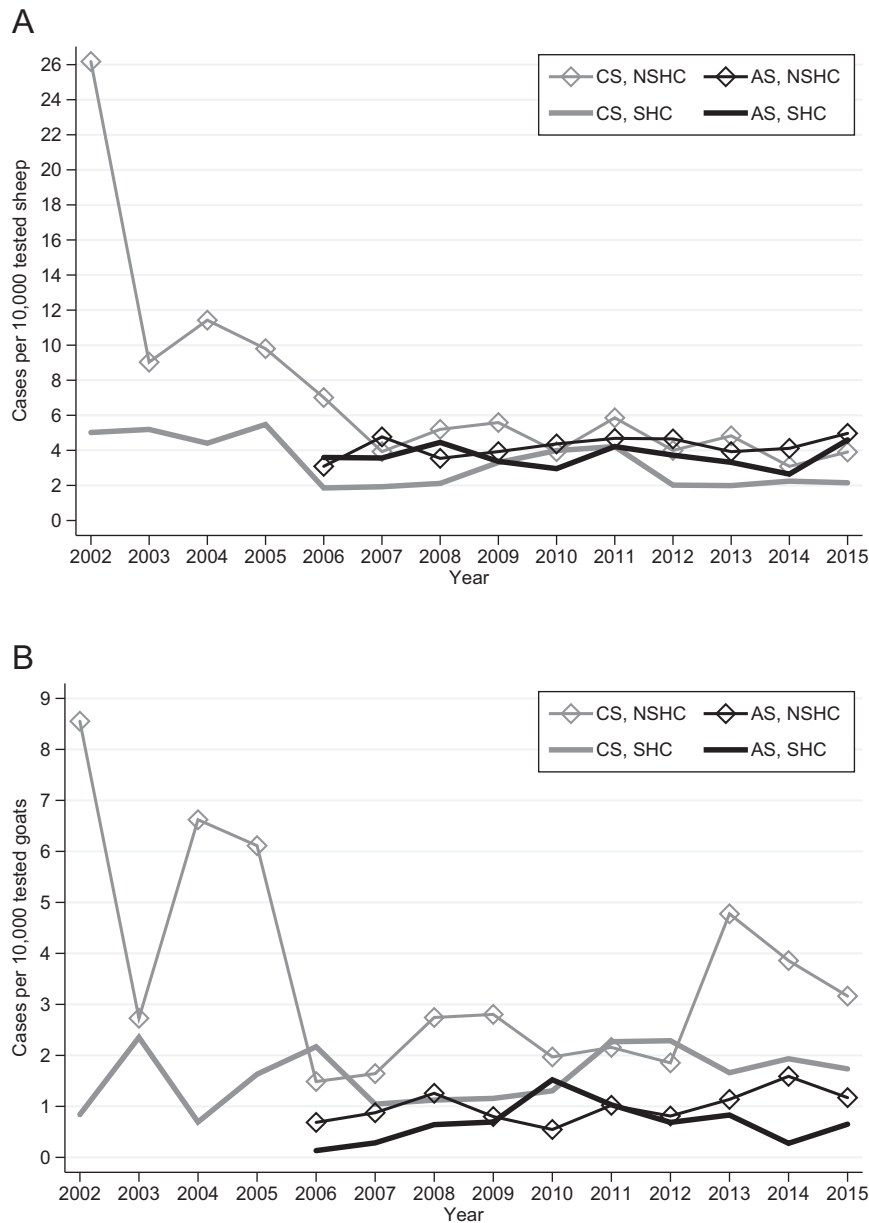
This figure is restricted to testing performed in NSHC and SHC target groups from non-infected flocks or not previously known as infected. NSHC: not slaughtered for human consumption; SHC: slaughtered for human consumption.

Figure 13: Proportion of scrapie cases (per 10,000 tests) in (A) sheep and (B) goats in the period 2002–2015 in the EU

The evolution of the absolute number of scrapie cases detected at the EU level is shown for each species in Figure 11. After a peak in the number of reported cases in 2006 and 2007 (when the number of tests also peaked), neither CS nor AS has shown a clear decline in the last 6 years. In the case of goats, this trend has to be interpreted with caution because of the great influence of one single MS, i.e. Cyprus, where the number of detected cases peaked in 2013 (Table 14). Looking at the total number of cases by type and surveillance target group (Figure 12), CS cases are reported more frequently among the NSHC target group than among the other surveillance target groups.

Table 14: Annual TSE cases by country, species and case type in 2002–2015 in the EU and other reporting countries

Sheep

Atypical

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
AT	0	0	0	0	0	0	0	0	0	0	4	3	2	1	**12**
BE	0	0	1	1	3	2	0	0	0	0	0	0	0	0	**8**
BG	0	0	0	0	0	0	2	0	0	0	0	2	0	0	**4**
CY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
CZ	0	0	0	1	1	0	0	0	0	0	0	0	0	3	**5**
DE	0	0	0	0	6	6	4	4	4	12	18	7	7	10	**78**
DK	0	0	0	0	0	0	2	2	0	2	5	0	0	0	**12**
EE	0	0	0	0	0	0	0	0	0	1	1	0	0	0	**2**
EL	0	0	0	0	1	1	3	4	4	1	4	3	5	2	**30**
ES	9	1	1	3	18	26	23	19	19	21	19	18	6	12	**195**
FI	0	0	1	1	2	2	0	0	0	3	0	1	1	0	**11**
FR	0	0	0	0	188	174	49	19	29	30	24	22	10	5	**550**
HR	0	0	0	0	0	0	0	0	0	0	0	1	0	1	**2**
HU	0	0	0	0	2	0	8	15	15	7	11	11	22	14	**105**
IE	0	0	0	0	0	0	8	2	5	2	1	4	7	7	**34**
IT	0	0	0	7	22	8	8	0	0	0	7	5	1	6	**69**
NL	0	0	0	2	0	2	0	0	0	1	7	5	0	0	**18**
PL	0	0	0	0	0	0	0	4	4	0	4	2	11	8	**34**
PT	0	0	1	28	71	69	78	91	36	46	40	44	20	30	**590**
RO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
SE	7	0	4	2	8	0	2	2	2	4	3	3	7	3	**48**
SI	0	0	0	0	0	0	0	0	0	2	1	1	1	2	**7**
SK	0	0	0	0	2	1	0	1	1	3	4	3	4	3	**22**
UK	0	17	30	30	42	15	15	26	26	19	24	17	11	17	**314**

Classical

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
AT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
BE	24	2	10	1	0	1	0	0	0	0	0	0	0	0	**38**
BG	0	0	0	0	0	0	2	1	3	3	2	0	3	0	**11**
CY	0	0	17	550	864	798	535	185	47	12	9	8	25	13	**3,063**
CZ	16	13	10	1	0	0	16	0	0	0	0	0	0	0	**56**
DE	12	24	39	27	24	9	3	8	1	1	0	0	0	1	**149**
DK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
EE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
EL	66	56	34	52	156	344	619	715	616	879	565	601	557	188	**5,448**
ES	21	29	14	105	44	148	215	87	126	40	33	48	36	69	**1,015**
FI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
FR	244	125	59	70	587	288	85	19	14	5	2	4	28	1	**1,531**
HR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HU	0	0	0	0	2	4	1	1	0	0	0	1	1	0	**10**
IE	66	41	54	52	121	79	20	33	22	39	8	7	19	1	**562**
IT	131	41	24	325	90	197	148	108	104	211	192	260	98	141	**2,070**
NL	59	61	53	62	84	36	23	4	1	1	0	2	0	0	**386**
PL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
PT	0	0	0	0	0	0	12	0	3	4	1	6	0	0	**26**
RO	0	0	0	3	7	28		8	9	85	114	153	93	98	**598**
SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
SI	0	0	12	101	42	12	1	0	3	0	0	0	0	0	**174**
SK	0	4	31	9	9	8	27	0	2	6	0	0	6	3	**105**
UK	451	435	329	302	251	43	10	11	1	130	6	6	0	2	**1,977**

Sheep

Case type	Atypical															Classical														
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Total EU	1	17	54	130	373	375	192	145	156	177	165	127	114	124	**2,150**	1,090	831	686	1,660	2,281	1,995	1,717	1,183	952	1,413	932	1,096	866	517	**17,219**
CH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	29	**29**
NO	0	14	14	4	8	9	7	12	5	6	6	12	8	10	**115**	0	1	2	0	9	0	5	5	0	0	0	0	0	0	**17**
Total EFTA	0	14	14	4	8	9	7	12	5	6	6	12	8	11	**116**	0	1	2	0	9	0	5	5	0	0	0	0	0	29	**46**
Total Sheep	1	31	68	134	381	384	199	157	161	183	171	139	122	135	**2,266**	1,090	832	688	1,660	2,290	1,995	1,717	1,188	952	1,413	932	1,096	866	520	**17,265**

Goats

Country	Atypical															Classical														
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
AT	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
BG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	1	3	0	0	0	0	1	**5**
CY	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**	0	0	11	293	465	1,188	1,072	788	325	287	1,087	1,662	1,353	923	**9,454**
DE	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
EL	0	0	0	0	0	0	0	0	0	0	0	1	1	1	**3**	5	8	12	11	12	58	67	55	65	56	69	68	31	21	**538**
ES	0	0	0	0	4	6	5	2	5	3	3	4	7	5	**44**	1	1	0	10	6	15	4	6	5	10	3	2	8	16	**87**
FI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**	4	0	0	4	0	0	0	0	0	0	0	0	0	0	**8**
FR	0	0	6	1	1	5	3	5	5	6	6	5	5	5	**53**	15	9	4	8	14	3	14	9	22	0	5	24	0	39	**166**
IT	0	0	3	3	3	1	0	0	0	4	0	3	0	1	**18**	1	3	2	6	10	4	1	13	4	5	7	7	7	21	**91**
NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
PT	0	0	0	0	1	3	3	2	0	1	2	0	0	0	**12**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
RO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	2	0	0	0	0	1	3	1	1	**8**
SI	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**	0	0	0	4	0	0	0	0	0	0	0	0	0	0	**4**
UK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	4	13	58	33	6	8	8	21	16	26	16	**209**
Total EU	0	0	9	9	8	15	15	9	12	14	11	13	15	14	**135**	26	21	29	340	520	1,328	1,191	878	432	366	1,193	1,782	1,426	1,038	**10,570**

Case type	Atypical															Classical														
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
CH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
NO	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total EFTA	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Goats	0	0	0	9	9	15	15	9	12	14	11	13	15	14	**136**	26	21	29	340	520	1,328	1,191	878	432	366	1,193	1,782	1,426	1,038	**10,570**

–: no information available.

The following cases are missing from the sheep data: 1 case in 2001 from CZ, 3 cases from IE in 2003, 7 cases in 2004 (2 IE; 5 CH), 2 cases from CH in 2005 (one AS and one CS); 245 cases in 2006 (236 IT; 4 IE; 3 ES; 2 CY), 6 cases in 2007 (4 CY; 1 CZ; 1 DE), 25 cases in 2008 (5 CY; 16 CZ; 2 EL; 2 UK), 1 case in 2009 from UK; 12 cases in 2010 (2 CY, 10 RO), 3 cases in 2012 (CY, DE, SE), 2 cases in 2013 (DE, PT), 146 cases in 2014 (144 IT; 1 NO; 1 RO). The following cases are missing from the goat data: 2 cases in 2004 (2 CH); 7 cases in 2007 (5 CY; 2 IT), 30 cases in 2007 (29 CY, 1 UK), 49 in 2008 (47 CY; 2 UK), 16 in 2009 from CY; 16 in 2010 (15 CY; 1 PT), 8 in 2011 from CY; 26 in 2012 from CY, 13 in 2013 (12 CY; 1 FR), 11 in 2014 from CY. 'Missing cases' were not included in this table because they could not be extracted from the electronic database (August 2016).

Figure 13 shows the evolution of the proportion of cases (per 10,000 tests) in non-infected flocks, which has remained stable over the last 10 years.

In the case of goats, for many years the proportion of CS cases per 10,000 animals tested was, and still remains, higher than the proportion of AS cases. This may reflect the large, persistent epidemics ongoing in Cyprus.

In general, the number of CS cases per 10,000 in NSHC animals seems to be higher than the number of CS cases SHC animals. This pattern is less clear in the case of AS.

Table 14 shows the cases of scrapie between 2002 and 2015 by species, scrapie type and reporting country.

In order to see an evolution (period 2002–2015) in the number of classical scrapie cases compared to the number of atypical cases, an annual ratio CS/AS was plotted for each MS (Figure 14). It is clear that some MS only detected classical cases while others detected only atypical cases. The CS/AS plot can be interpreted under the assumption that the occurrence of AS is homogeneously distributed in the EU and that the occurrence of AS is not influenced by breeding programmes (EFSA BIOHAZ Panel, 2010, 2014). There are a number of MS for which the CS/AS ratio has decreased over time, for example, Germany, France, Ireland, the Netherlands and the UK (this is shown by a decrease in the ratios crossing the line at 1, in which the number of cases of CS and AS would be equal). In some MS, such as Greece, Italy and Romania, the number of CS cases is consistently higher than the number of AS cases over time (line always above 1). There is another group of countries (Austria, Denmark, Estonia, Finland, Croatia, Poland, Portugal and Sweden) in which more AS cases than CS cases were confirmed (line always below 1). However, if CS is more likely to be detected in animals tested within the target group NSCH compared to SHC, the trend of the ratio CS/AS may in part reflect differences across countries or across time of the ratio of NSHC/SHC tested animals.
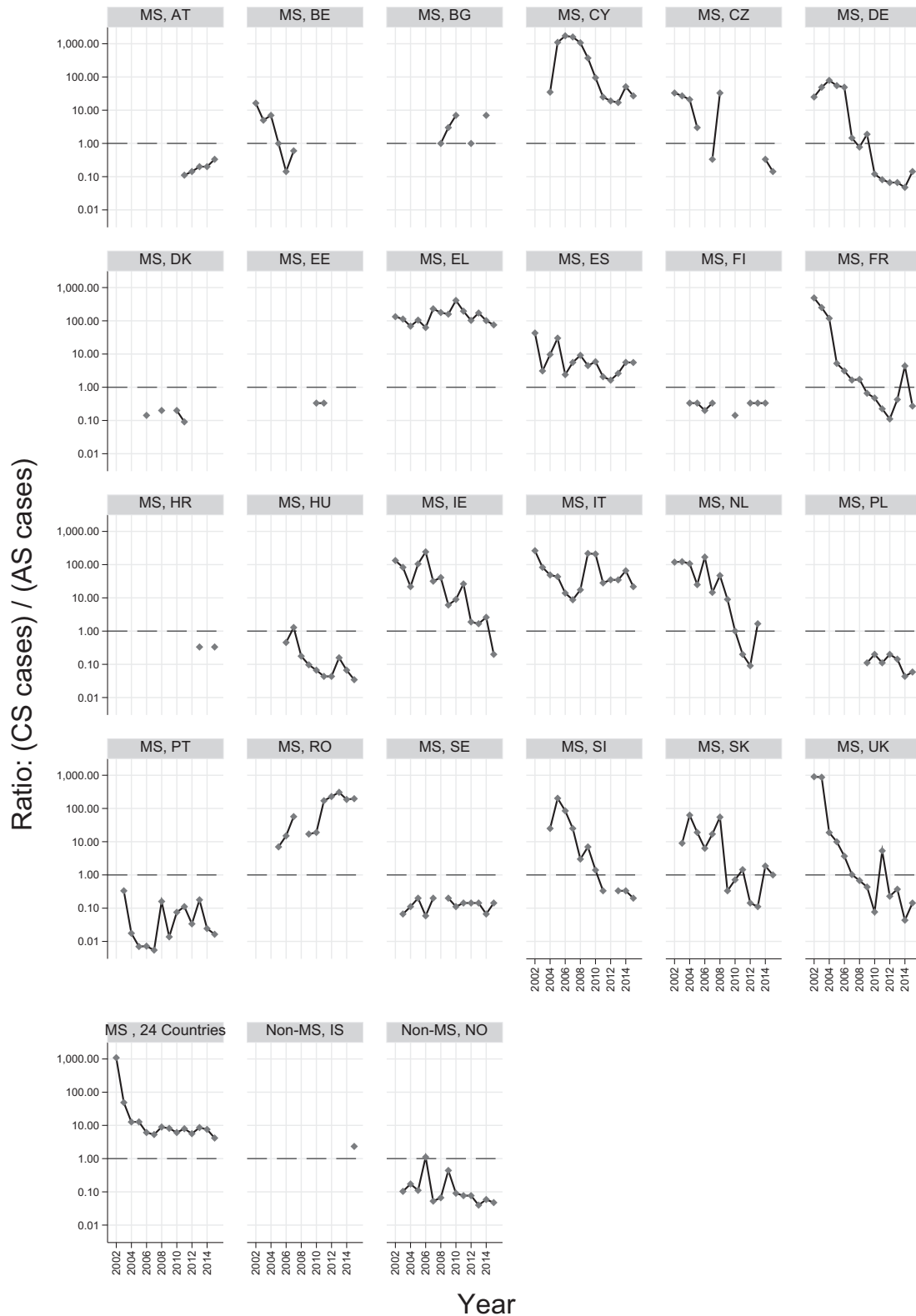
Only data from cases in sheep are considered. Positive values of the ratio line in a certain year show how many times the CS cases were more frequently detected than the AS ones. At 1, the CS cases were equal to the AS ones.

Figure 14: Evolution of the ratio of CS cases to AS cases in the period 2002–2015 by the Member State

Figure 15 (A, sheep and B, goats) shows that the age of AS cases (mean: 79.3 months with standard error (SE): 0.86 and mean: 82.2 months with SE: 3.53 in sheep and goats, respectively) is higher than that of CS cases (mean: 45.6, SE: 0.18 and mean: 49.9 months, SE: 0.22 in sheep and goats, respectively). This observation is the same for all surveillance target groups. However, for AS cases detected in sheep for the EM and SU targets groups, this is trend is less obvious because of the low numbers of AS cases detected in 2011, 2012 and 2013.
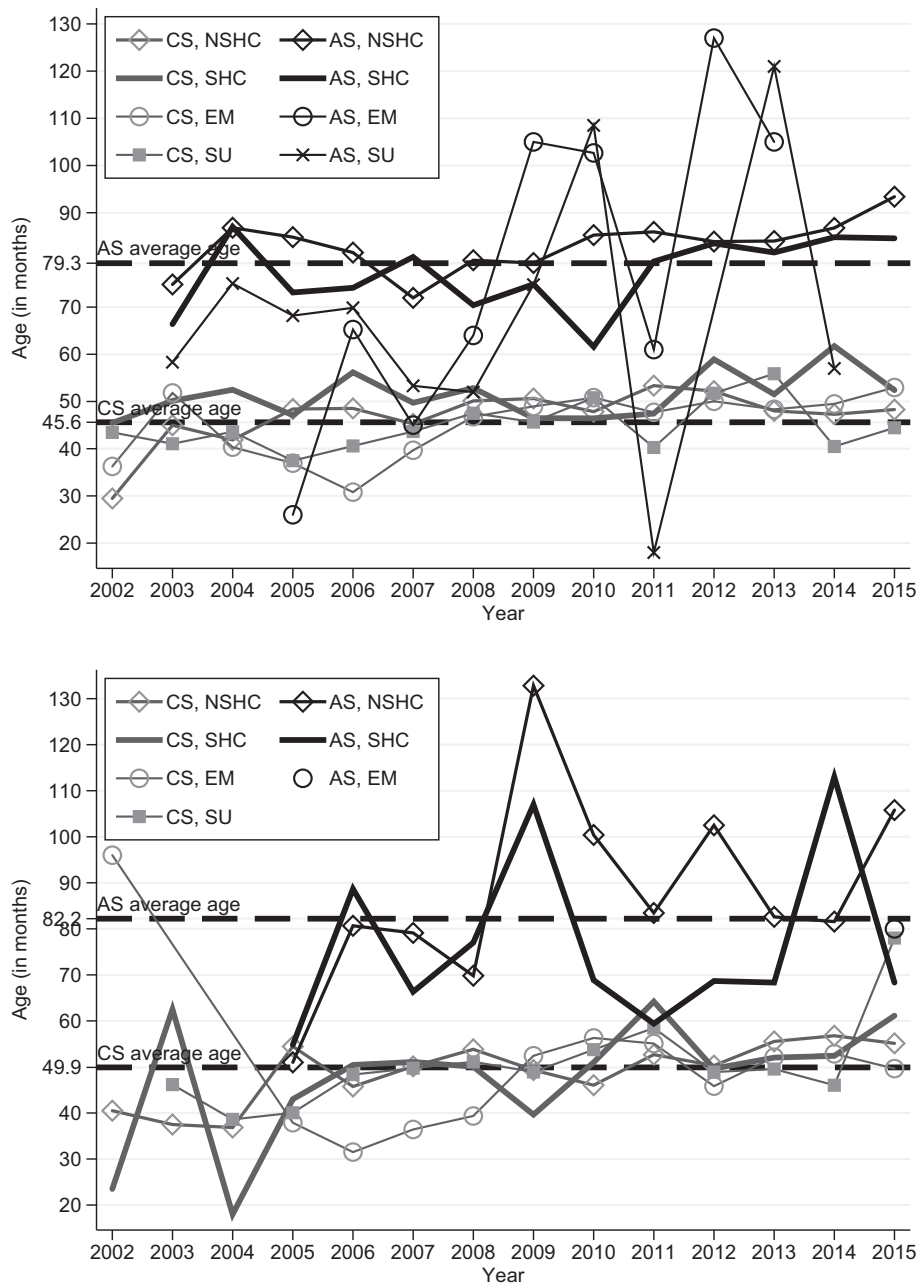
AS: atypical scrapie; CS: classical scrapie; EM: eradication measures; NSHC: not slaughtered for human consumption; SHC: slaughtered for human consumption; SU: BSE suspected.

Figure 15: Average age of the TSE cases confirmed in sheep (A) and goats (B) by case type and surveillance target group in the period 2002–2015 in the EU and other reporting countries

Table 15 summarises the number of discriminatory tests performed after detecting a scrapie case by the MS during 2015. In sheep, 62% of the cases were submitted to discriminatory testing, whereas this figure was 12% in goats. In sheep, apart for a small proportion (4.5%) of inconclusive results, all scrapie cases were submitted to discriminatory testing (386 of 404 cases in the EU 28 and three

non-MS or 95.5%) were confirmed as being CS cases (BSE excluded). The proportion was the same in goats in 117 of 124 cases (94.3%) submitted to discriminatory testing, BSE was excluded.

Table 15: Number of discriminatory tests and results in sheep and goats by reporting country performed in 2015 in the EU and other reporting countries

	Total cases	Cases submitted to discriminatory testing					Cases not submitted to discriminatory testing
		BSE-not excluded	BSE-excluded	Inconclusive	Total	% of total TSE cases	Blank
Sheep							
Country							
AT	1	0	0	0	0	0	1
CY	13	0	1	0	1	7.7	12
CZ	3	0	3	0	3	100	0
DE	11	0	1	0	1	9.1	10
EL	190	0	61	0	61	32.1	129
ES	81	0	81	0	81	100	0
FR	6	0	1	0	1	16.7	5
HR	1	0	0	0	0	0	1
HU	14	0	0	0	0	0	14
IE	8	0	1	0	1	12.5	7
IT	147	0	128	18[a]	146	99.3	1
PL	8	0	0	0	0	0	8
PT	30	0	0	0	0	0	30
RO	98	0	98	0	98	100	0
SE	3	0	0	0	0	0	3
SI	2	0	0	0	0	0	2
SK	6	0	3	0	3	50	3
UK	19	0	2	0	2	10.5	17
Total EU	**641**	**0**	**380**	**18**	**398**	**62.1**	**243**
CH	0	0	0	0	0	0	0
IS	30	0	6	0	6	20	24
NO	10	0	0	0	0	0	10
Total EFTA	**40**	**0**	**6**	**0**	**6**	**15**	**34**
Total sheep	**681**	**0**	**386**	**18**	**404**	**59.3**	**277**
Goats							
Country							
BG	1	0	1	0	1	100	0
CY	924	0	17	0	17	1.8	907
EL	22	0	7	0	7	31.8	15
ES	21	0	21	0	21	100	0
FR	44	0	32	7	39	88.6	5
IT	22	0	22	0	22	100	0
RO	1	0	1	0	1	100	0
SI	1	0	0	0	0	0	1
UK	16	0	16	0	16	100	0
Total EU	**1,052**	**0**	**117**	**7**	**124**	**11.8**	**928**
CH	–	–	–	–	–	–	–
IS	0	0	0	0	0	0	0
NO	0	0	0	0	0	0	0

	Total cases	Cases submitted to discriminatory testing					Cases not submitted to discriminatory testing
		BSE-not excluded	BSE-excluded	Inconclusive	Total	% of total TSE cases	Blank
Total EFTA	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total goats	**1,052**	**0**	**117**	**7**	**124**	**11.8**	**928**

−: no surveillance performed; BSE: bovine spongiform encephalopathy; TSE: transmissible spongiform encephalopathy
(a): Inconclusive cases were obtained from the EM target surveillance group and their results were not available at moment of reporting.

3.2.1. Genotyping in sheep

In sheep, according to Regulation (EC) 999/2001 Annex III Chapter A Part I point 8, the genotype, and, where possible, the breed, of each positive case (according to point 8.1) should be determined. A random sample of ovine animals (according to point 8.2) should also be genotyped.

The classification of genotypes according to the Great Britain's NSP is summarised in Table 16. A three-tier classification is also reported, as described in Section 2, in order to show evolution of the genotype distribution in sheep populations within the EU.

Table 16: Sheep genotype classification according to Great Britain's National Scrapie Plan (NSP) and the three-tier classification

NSP group	Genotype	Comment	EU report classification
NSP1	ARR/ARR	Genetically most resistant	Resistant
NSP2	ARR/ARQ; ARR/ARH; ARR/AHQ	Genetically resistant	Semiresistant
NSP3	ARQ/ARQ	Genetically little resistant (ARQ/ARQ may be scientifically reviewed)	Susceptible
NSP3 other (NSP3O)	AHQ/AHQ; ARH/ARH; ARH/ARQ; AHQ/ARH; AHQ/ARQ		Susceptible
NSP4	ARR/VRQ	Genetically susceptible	Susceptible
NSP5	ARQ/VRQ; ARH/VRQ; AHQ/VRQ; VRQ/VRQ	Genetically highly susceptible	Susceptible

Table 17 shows the genotypes of scrapie cases by reporting country reported in 2015 in the EU and other reporting countries.

Table 17: Distribution of genotypes of confirmed scrapie cases in sheep, by reporting country and National Scrapie Plan (NSP) type in 2015 in the EU and other reporting countries

NSP group	Atypical scrapie								Classical scrapie							
	NSP1	NSP2	NSP3	NSP3O	NSP4	NSP5	Unknown	Total	NSP1	NSP2	NSP3	NSP3O	NSP4	NSP5	Unknown	Total
AT	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
CY	0	0	0	0	0	0	0	0	0	8	1	0	0	0	4	13
CZ	1	0	1	1	0	0	0	3	0	0	0	0	0	0	0	0
DE	0	0	1	2	0	2	5	10	0	0	1	0	0	0	0	1
EL	0	1	0	0	0	0	1	2	0	2	133	12	0	4	37	188
ES	0	3	5	0	0	0	4	12	0	0	62	3	0	0	4	69
FR	1	2	2	0	0	0	0	5	0	0	0	0	0	0	1	1
HR	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
HU	0	10	3	1	0	0	0	14	0	0	0	0	0	0	0	0
IE	0	0	0	0	0	0	7	7	0	0	0	0	0	0	1	1
IT	1	2	2	1	0	0	0	6	0	0	107	15	0	0	19	141
PL	0	7	1	0	0	0	0	8	0	0	0	0	0	0	0	0
PT	4	9	10	5	0	0	2	30	0	0	0	0	0	0	0	0
RO	0	0	0	0	0	0	0		0	11	58	4	2	22	1	98
SE	0	0	1	0	0	0	2	3	0	0	0	0	0	0	0	0
SI	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
SK	0	1	0	2	0	0	0	3	0	0	2	0	0	1	0	3
UK	1	5	0	8	0	0	3	17	0	0	0	0	0	2	0	2
Total EU	**8**	**40**	**27**	**23**	**0**	**2**	**24**	**124**	**0**	**21**	**364**	**34**	**2**	**29**	**67**	**517**
CH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IS	0	0	0	1	0	0	0	1	0	0	11	0	0	*18*	0	29
NO	0	3	2	4	0	1	0	10	0	0	0	0	0	0	0	0
Total EFTA	**0**	**3**	**2**	**5**	**0**	**1**	**0**	**11**	**0**	**0**	**11**	**0**	**0**	**18**	**3**	**29**

–: no surveillance performed.

A

B
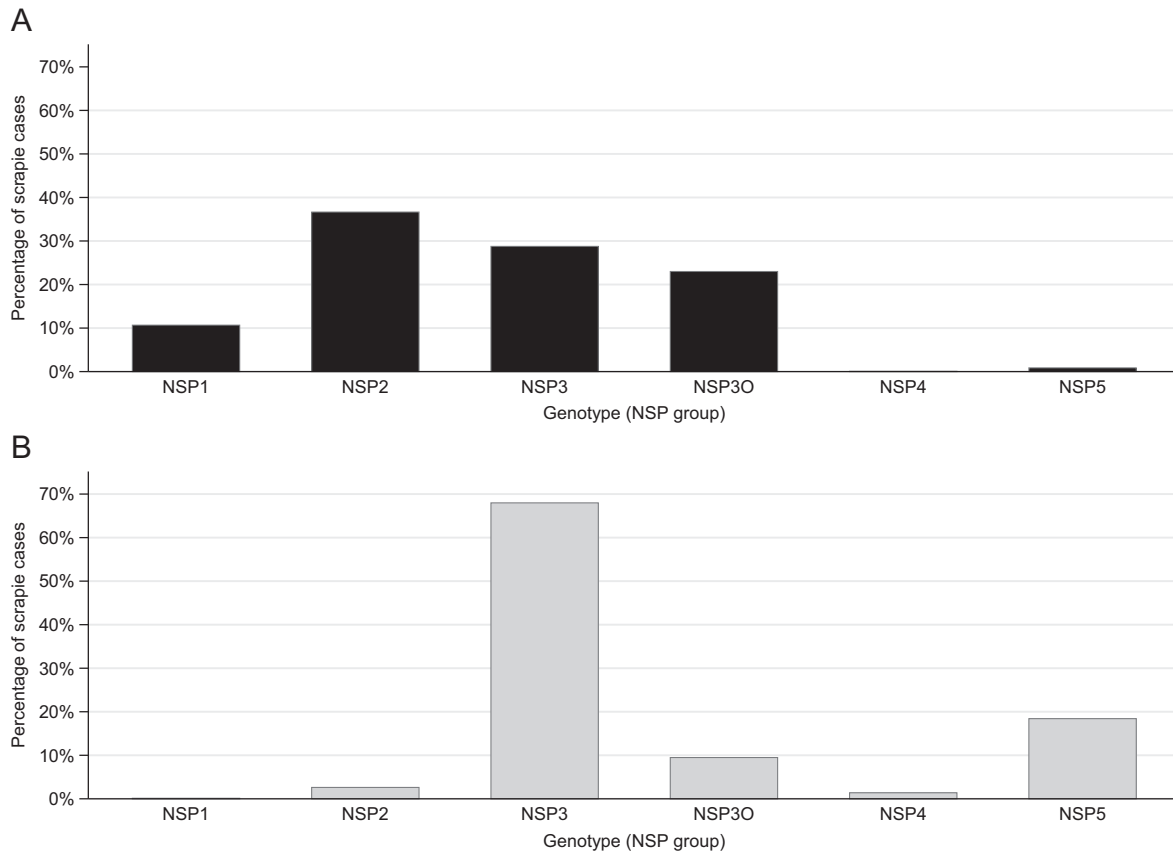
(A) Atypical scrapie. (B) Classical scrapie.

Figure 16: Frequency distribution of genotypes for sheep scrapie cases in the period 2002–2015 by case type and NSP category in the EU and other reporting countries

In total, 429 (95%) out of the 450 cases of CS in sheep (95%) reported in 2015 in the EU (Table 17) were from the susceptible genotype groups NSP3, NSP3O, NSP4 and NSP5; consistent with the pattern observed in all cases reported since 2002 (Figure 16). In AS, the same genotype groups accounted for 61% of all cases.

When aggregated at the EU level, the resistant genotype group accounts for between 65% and 75% of the total number of sheep genotyped over the past 5 years, whereas the susceptible group accounts, after excluding Cyprus, for less than 20% (Table 18 and Figure 17).

Table 18 shows the genotypes obtained from the sample of tested sheep by MS in 2015 in the EU and other reporting non-MS.

Table 18: Distribution of genotypes in randomly selected sheep in accordance with Regulation (EC) 999/2001 Annex III Chapter A Part I point 8.2 in 2015, by the MS and the National Scrapie Plan (NSP) group, in the EU and other reporting countries

Country	Number of genotyped animals (% of sample within country)							
	NSP1	NSP2	NSP3	NSP3O	NSP4	NSP5	Other	Total
AT	10 (9.4)	36 (34.0)	36 (34.0)	13 (12.3)	1 (0.9)	6 (5.7)	4 (3.8)	106
BE	116 (55.8)	55 (26.4)	12 (5.8)	16 (7.7)	1 (0.5)	4 (1.9)	4 (1.9)	208
BG	–	–	–	–	–	–	–	–
CY[a]	52,471 (82.4)	8,534 (13)	338 (0.5)	148 (0.2)	673 (1.1)	46 (0.1)	1,440 (2.3)	63,650
CZ	15 (34.1)	22 (50.0)	2 (4.5)	3 (6.8)	2 (4.5)	0 (0)	0 (0)	44
DE	1,619 (70.9)	489 (21.4)	110 (4.8)	35 (1.5)	11 (0.5)	18 (0.8)	2 (0.1)	2.284
DK	24 (24.0)	20 (20.0)	37 (37.0)	14 (14.0)	3 (3.0)	2 (2.0)	0 (0)	100
EE	41 (41.0)	42 (42.0)	12 (12.0)	4 (4.0)	1 (1.0)	0 (0)	0 (0)	100
EL	17 (8.3)	60 (29.4)	79 (38.7)	17 (8.3)	5 (2.5)	6 (2.9)	20 (9.8)	204
ES	103 (16.0)	209 (32.5)	207 (32.2)	49 (7.6)	13 (2.0)	14 (2.2)	48 (7.5)	643
FI	3 (3.0)	18 (17.8)	60 (59.4)	9 (8.9)	0 (0)	11 (10.9)	0 (0)	101
FR	409 (51.6)	208 (26.3)	57 (7.2)	4 (0.5)	18 (2.3)	15 (1.9)	81 (10.2)	792
HR	24 (12.0)	73 (36.5)	0 (0)	89 (44.5)	3 (1.5)	11 (5.5)	0 (0)	200
HU	347 (57.8)	186 (31.0)	32 (5.3)	19 (3.2)	11 (1.8)	5 (0.8)	0 (0)	600
IE	178 (30.1)	237 (40.0)	71 (12.0)	59 (10.0)	22 (3.7)	21 (3.5)	4 (0.7)	592
IT	125 (19.9)	291 (46.3)	151 (24.0)	39 (6.2)	3 (0.5)	12 (1.9)	7 (1.1)	628
LT	10 (12.7)	29 (36.7)	37 (46.8)		0 (0)	3 (3.8)	0 (0)	79
LU	45 (43.3)	40 (38.5)	1 (1.0)	2 (1.9)	9 (8.7)	7 (6.7)	0 (0)	104
LV	23 (21.7)	48 (45.3)	31 (29.2)	0 (0)	2 (1.9)	2 (1.9)	0 (0)	106
MT	–	–	–	–	–	–	–	–
NL	466 (67.3)	183 (25.0)	37 (5.1)	23 (3.1)	15 (2.0)	8 (1.1)	0 (0)	732
PL	44 (38.9)	49 (43.4)	14 (12.4)	3 (2.7)	3 (2.7)	0 (0)	0 (0)	113
PT	94 (15.2)	223 (36.0)	213 (39.4)	42 (6.8)	19 (3.1)	28 (4.5)	1 (0.2)	620
RO	64 (12.0)	188 (35.3)	209 (39.3)	26 (4.9)	10 (1.9)	33 (6.2)	2 (0.4)	532
SE	5 (5.0)	17 (16.8)	62 (61.4)	4 (4.0)	0 (0)	13 (12.9)	0 (0)	101
SI	0 (0)	41 (32.8)	60 (48.0)	13 (10.4)	2 (1.6)	4 (3.2)	5 (4.0)	125
SK	29 (29.0)	44 (44.0)	17 (17.0)	4 (4.0)	1 (1.0)	5 (5.0)	0 (0)	100
UK	221 (36.3)	258 (42.4)	46 (7.6)	51 (8.4)	19 (3.1)	14 (2.3)	0 (0)	609
Total EU	**56,503 (77.0)**	**11,600 (15.8)**	**1,931 (2.6)**	**686 (0.9)**	**847 (1.1)**	**288 (0.4)**	**1,618 (2.2)**	**73,473**
CH	–	–	–	–	–	–	–	–
IS	0 (0)	0 (0)	165 (74.3)	36 (16.2)	0 (0)	21 (9.5)	0 (0)	222
NO	87 (13.9)	230 (36.7)	103 (16.5)	96 (15.3)	47 (7.5)	63 (10.1)	0 (0)	626
Total EFTA	**87 (10.2)**	**230 (27.1)**	**268 (31.6)**	**132 (15.6)**	**47 (5.5)**	**84 (9.9)**	**0 (0)**	**848**

–: no genotyping performed in 2015.
(a): Data from Cyprus also include genotyping data of non-infected and infected flocks.
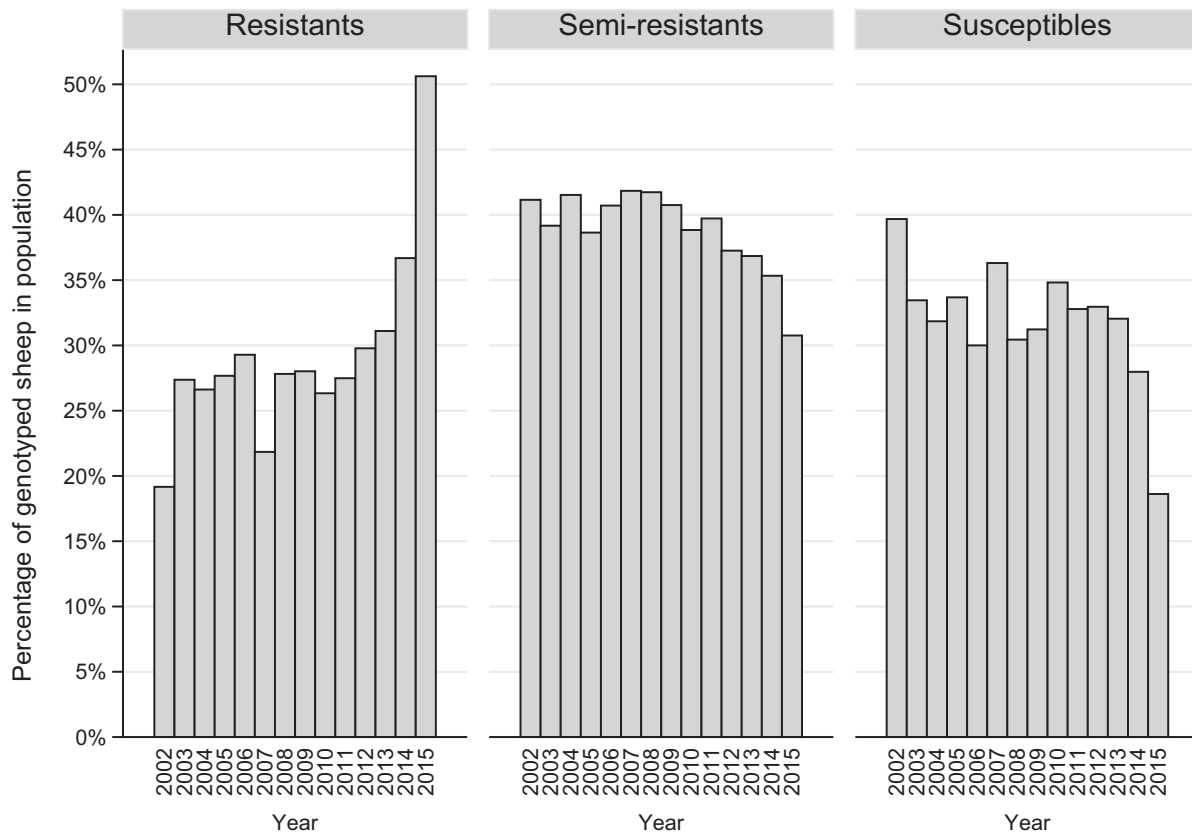
Data from Cyprus were excluded.

Figure 17: Frequency distribution of the three genotype groups (NSP1 = Resistant; NSP2 = Semiresistant; NSP3 + NSP3O + NSP4 + SNP5 = Susceptible as referred to in Table 16) in sheep sampled for genotyping according to Regulation (EC) 999/2001 Annex III Chapter A Part I point 8.2 in the period 2002–2015 in the EU

3.3. Other species

In 2015, three MS (Estonia, Finland and Hungary) and one non-MS (Norway) reported results on samples tested for TSE in species other than bovine, ovine and caprine animals. In total, 580 samples were tested in the EU and 17 samples tested by Norway in different species. None of the samples tested positive. More than 90% of the tested samples were from cat (*Felis catus*) followed by mink (*Mustela lutreola*) and fox (genus *Vulpes*).

Table 19: Number of samples tested for TSE in animal species other than bovine, ovine and caprine in 2015 in the EU and other reporting countries

Reporting country	Species										
	Red deer (*Cervus elaphus*)	White-tailed deer (*Odocoileus virginianus*)	Reindeer (*Rangifer tarandus*)	Fallow deer (*Dama dama*)	Roe deer (*Capreolus capreolus*)	Moose (*Alces alces*)	Wild ruminants	Racoon dog (*Nyctereutes procyonoides*)	Fox (genus *Vulpes*)	Mink (*Mustela lutreola*)	Cat (*Felis catus*)
EE	0	0	0	0	0	0	0	0	0	25	0
FI	0	4	3	1	0	6	0	10	37	51	63
HU	0	0	0	0	0	0	9	0	0	0	371
NO	4 (1)[a]	0	1 (1)[a]	0	8 (7)[a]	4 (2)[b]	0	0	0	0	0

(a): Total number of tested samples. The total number of wild animals tested is given in parentheses, i.e. from some animals, several samples were tested.
(b): One of the moose tested could not be specified with relation to target group (hunted, wild, captive).
All tests resulted negative. The data were extracted from annual reports submitted by reporting countries.

4.   Conclusions

In 2015, there was an almost 40% reduction in the total number of bovine samples tested compared with the previous year, moving from 2.3 to 1.4 million. Tests performed in cattle in the EU are mainly based on the exhaustive testing of risk animals over 48 months of age, which increases the probability of detecting cases even if at a very low rate, compared with random sampling of the slaughtered populations. Five BSE cases were reported by four different MS: one C-BSE case reported by both Ireland and the UK, and three atypical BSE cases – two H-type in Slovenia and the UK, and one L-type in Spain. One additional atypical case (H-type) has been detected in Norway.

The reliability of BSE categorisation by case type has improved over time in countries that detected BSE cases, because, samples from a large proportion of cases were submitted to discriminatory testing (either retrospectively or prospectively).

Surveillance data reflects, either in terms of absolute number of cases reported or prevalence, a pattern consistent with a decline in the European BSE epidemic. However, there were no differences in 2015 with respect to the recent previous years: a similar number of cases were detected, either of classical BSE (two and three cases in 2013 and 2014, respectively) or atypical BSE (five and eight cases in 2013 and 2014, respectively). The two C-BSE cases reported in 2015 were born in 2010 (Ireland) and 2009 (the UK), i.e. 14 and 13 years, respectively, after the enforcement of the feed ban in these countries (BARB cases).

Age-period analysis of the surveillance data confirms a decrease in the occurrence of C-BSE over time, associated with an increase in the age class with the highest prevalence over the years. This pattern indicates that the measures applied to control the main risk factors (e.g. feed ban) have been effective in reducing the burden of the disease. A similar conclusion is also justified by the fact that the highest level of detection occurred in animals born in 1995, when the decline commenced.

No cases of BSE have been detected in the last 7 years in cattle aged < 60 months. However, current monitoring of risk animals (i.e. AM, ES and FS) > 48 months of age allows for the detection of such cases. The detection of cases among young animals may represent an important early warning of a potential re-emergence of a BSE epidemic.

Since 2002, ca 8.4 million small ruminants have been tested in the frame of the EU-wide TSE surveillance. In 2015 a total of 319,638 sheep and 135,857 goats were tested. Among non-infected flocks in both species, there is a decreasing trend in the number of sheep and goats from non-infected flocks tested as TSE suspects (SU target group). There is high between-country heterogeneity with relation to the implementation of the surveillance activities as per the EU legislation. Considering the required samples to be taken within the SHC and NSHC target surveillance groups, 24 and 25 MS fulfilled the requirements in sheep and goats, respectively.

Surveillance activities carried out in 2015 in the EU 28 led to the detection of 641 and 1,052 scrapie cases in sheep and goats, respectively. Ovine scrapie was reported by 18 MS and caprine scrapie by nine MS, even though in the case of goats 90% of the cases were reported by Cyprus.

There is no clear overall trend of improvement in the epidemiological situation of scrapie in small ruminants either in terms of absolute number of cases or proportion of cases. However, in a number of countries a decreasing trend in the annual ratios of CS/AS was observed.

Genotyping data consistently confirm the association between genotype and CS and that the proportion of susceptible animals in the sampled population has decreased over the recent years.

In 2015, 580 samples from species other than domestic ruminants (including wild animals) were tested in three MS and one non-MS (Estonia, Finland, Hungary and Norway); no positives were reported.

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Abbreviations

AM	ante mortem
AS	atypical scrapie
BARB	born after the revised feed ban
BSE	bovine spongiform encephalopathy
C-BSE	classical bovine spongiform encephalopathy
CS	classical scrapie
EFTA	European Free Trade Association
ELISA	enzyme-linked immunosorbent assay
EM	eradication measures
ES	emergency slaughtered
EURL	European Union Reference Laboratory
FS	fallen stock
H-BSE	H-type bovine spongiform encephalopathy
IHC	immunohistochemistry
HS	healthy slaughtered
L-BSE	L-type bovine spongiform encephalopathy
MS	Member State
NRL	National Reference Laboratories
NSHC	not slaughtered for human consumption
NSP	Nation Scrapie Plan
NUTS	Nomenclature of Units for Territorial Statistics
OIE	Terrestrial Animals of the World Organisation for Animal Health
SHC	slaughtered for human consumption
SAF	scrapie-associated fibrils
SU	BSE suspect
TSE	transmissible spongiform encephalopathy
WB	western blot

Country codes

Austria	AT	Greece	EL	Norway	NO
Belgium	BE	Hungary	HU	Poland	PL
Bulgaria	BG	Iceland	IS	Portugal	PT
Croatia	HR	Ireland	IE	Romania	RO
Cyprus	CY	Italy	IT	Slovakia	SK
Czech Republic	CZ	Latvia	LV	Slovenia	SI
Denmark	DK	Lithuania	LT	Spain	ES
Estonia	EE	Luxembourg	LU	Sweden	SE
Finland	FI	Malta	MT	Switzerland	CH
France	FR	Netherlands	NL	United Kingdom	UK
Germany	DE				

MS countries: AT; BE; BG; HR; CY; CZ; DK; EE; FI; FR; DE; EL; HU; IE; IT; LV; LT; LU; MT; NL; PL; PT; RO; SK; SI; ES; SE; UK.
EFTA Countries (non-MS countries): CH (including Lichtenstein); IS; NO.

Appendix A – Summary tables of tested bovine animals in 2015 in the EU and other reporting countries

Table A.1: All bovine animals tested in 2015 in the EU and other reporting countries

Country	< 24[a]	24–29	30–35	36–47	48–59	60–71	72–83	84–95	96–107	108–119	120–131	132–143	144–155	> 155	Unknown	Total
AT	0	319	410	836	3,042	3,148	3,082	2,698	1,991	1,449	1,219	854	662	1,298	0	21,008
BE	3	6	21	50	6,830	5,721	4,209	2,850	1,802	1,094	595	330	226	640	348	24,725
BG	0	462	3,023	2,095	2,045	1,649	1,429	1,146	880	819	799	595	390	762	0	16,094
CY	0	0	0	1	242	205	172	138	84	40	37	15	8	7	0	949
CZ	20	1,887	1,623	3,235	3,167	2,916	2,177	1,583	1,050	695	431	295	250	766	0	20,095
DE	809	284	266	884	37,022	34,813	28,172	19,948	37,048	23,065	13,799	8,232	4,949	9,407	202	218,900
DK	14	2	4	38	6,393	5,324	3,507	1,812	953	503	252	183	109	316	104	19,514
EE	0	1	0	3	1,045	913	673	463	244	148	59	40	14	30	0	3,633
EL	3	5	93	86	207	237	2,575	2,320	1,756	1,256	966	737	598	2,198	0	13,037
ES	0	1	6	11	11,307	10,384	8,362	6,408	4,472	3,174	2,422	2,217	2,327	9,351	0	60,442
FI	3	2	1	13	3,225	3,022	2,193	1,262	690	401	284	167	90	219	4	11,576
FR	258	447	1,017	4,034	38,034	36,040	30,796	24,829	18,310	13,672	9,888	7,518	5,859	73,658	4,120	268,480
HR	83	628	2,123	3,684	3,361	3,424	3,487	2,629	2,054	1,719	1,541	1,233	940	1,843	696	29,445
HU[b]	26	1,257	967	2,155	2,080	1,700	1,371	867	521	370	319	196	151	472	0	12,452
IE	1	13	19	149	7,775	6,921	6,521	5,707	5,377	4,830	3,932	3,144	2,118	4,939	0	51,446
IT	18	14	86	108	13,735	11,929	9,343	6,686	4,438	2,733	1,701	1,155	850	2,193	0	54,989
LT	0	0	0	0	695	641	596	473	339	330	218	142	117	153	0	3,704
LU	0	0	1	0	499	491	385	256	176	116	78	37	31	78	57	2,205
LV	17	330	287	545	476	436	380	274	206	131	96	43	28	51	0	3,300
MT	0	0	0	11	57	45	30	26	18	8	3	0	1	1	0	200
NL	26	32	39	139	10,438	11,472	10,096	7,090	4,583	2,749	1,399	846	486	753	251	50,399
PL	4	3	0	3	7,702	7,529	6,353	4,736	49,463	41,948	32,694	21,236	15,527	35,623	0	222,821
PT	0	0	0	0	3,484	2,888	2,558	2,122	1,807	1,261	1,107	1,106	1,083	4,145	0	21,561
RO	39	393	10,187	15,367	12,038	10,008	8,423	7,584	7,964	8,522	9,161	6,649	6,439	23,686	3	126,463
SE	29	76	110	646	2,070	2,327	1,824	1,176	625	397	221	135	97	318	28	10,079
SI	12	883	816	1,312	1,171	1,097	1,069	755	572	395	279	192	134	265	0	8,952
SK	1	669	669	1,491	1,296	1,143	834	588	420	296	171	112	88	191	0	7,969

EUSR on Transmissible Spongiform Encephalopathies in 2015

Country	< 24[a]	24–29	30–35	36–47	48–59	60–71	72–83	84–95	96–107	108–119	120–131	132–143	144–155	> 155	Unknown	Total
UK	4	71	144	741	23,693	22,628	20,073	16,755	13,015	9,988	7,493	6,005	4,798	13,769	225	139,402
Total EU	1,370	7,785	21,912	37,637	203,129	189,051	160,690	123,181	160,858	122,109	91,164	63,414	48,370	187,132	6,038	1,423,840
CH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,762	11,762[c]
IC	0	0	0	3	1	0	0	16	3	4	0	0	0	0	48	75[d]
NO	25	40	40	154	1,842	1,730	1,235	708	374	178	115	51	36	60	193	6,781
Total EFTA	25	40	40	157	1,843	1,730	1,235	724	377	182	115	51	36	60	12,003	18,618

(a): Age categories are expressed in months.
(b): Total of HU contains 12 tested water buffaloes.
(c): Total of CH contains 28 animals with age > 24 months and 11,734 animals with age > 48 months.
(d): Total of IC contains 43 animals with age > 48 months and 5 animals with age > 72 months.

Table A.2: At Risk bovine animals (EM, FS, AM) in 2015 in the EU and other reporting countries

Country	< 24	24–29	30–35	36–47	48–59	60–71	72–83	84–95	96–107	108–119	120–131	132–143	144–155	> 155	Unknown	Total
AT	0	318	183	245	2,369	2,474	2,467	2,164	1,575	1,080	869	607	463	1,002	0	15,816
BE	3	3	4	27	6,802	5,687	4,180	2,818	1,791	1,086	588	323	216	603	324	24,455
BG	0	462	233	217	216	126	143	130	109	84	84	82	92	89	0	2,067
CY	0	0	0	1	242	205	172	138	84	40	37	15	8	7	0	949
CZ	12	1,887	1,623	3,234	3,167	2,916	2,177	1,583	1,048	695	430	295	250	765	0	20,082
DE	80	123	143	646	36,400	34,180	27,665	19,523	12,231	7,421	4,457	2,676	1,639	3,999	198	151,381
DK	13	1	3	36	6,384	5,319	3,506	1,808	950	501	251	181	109	312	104	19,478
EE	0	1	0	3	1,045	913	672	463	244	148	59	40	14	30	0	3,632
EL	1	5	8	16	185	188	169	175	139	87	81	59	77	361	0	1,551
ES	0	1	3	10	11,298	10,371	8,353	6,401	4,451	3,165	2,416	2,214	2,325	9,173	0	60,181
FI	3	2	1	13	3,224	3,020	2,189	1,259	690	401	284	167	90	219	4	11,566
FR	211	434	986	3,995	37,362	35,458	30,316	24,391	17,984	13,417	9,691	7,371	5,730	15,765	3,520	206,631
HR	77	597	541	1,035	934	930	879	560	430	304	243	169	113	241	290	7,343
HU	26	1,253	924	2,095	2,015	1,644	1,315	828	492	325	284	178	139	397	0	11,915
IE	1	13	19	149	7,775	6,921	6,521	5,707	5,377	4,830	3,932	3,144	2,118	4,939	0	51,446
IT	18	13	20	71	13,707	11,897	9,311	6,616	4,302	2,655	1,643	1,119	816	2,159	0	54,347
LT	0	0	0	0	695	641	596	473	339	330	218	142	117	153	0	3,704
LU	0	0	0	0	499	491	385	256	175	116	78	37	31	78	57	2,203
LV	16	330	287	544	476	436	380	274	206	131	96	43	28	51	0	3,298
MT	0	0	0	11	57	45	30	26	18	8	3	0	1	1	0	200
NL	23	31	17	119	10,418	11,450	10,074	7,072	4,562	2,740	1,390	837	480	736	245	50,194
PL	0	0	0	1	7,702	7,529	6,352	4,736	3,498	2,705	1,947	1,212	900	1,800	0	38,382
PT	0	0	0	0	3,484	2,888	2,453	2,040	1,745	1,215	1,074	1,076	1,055	4,023	0	21,053
RO	35	361	318	577	472	414	334	247	202	175	204	159	133	402	3	4,036
SE	29	76	109	646	2,070	2,327	1,824	1,176	625	397	221	135	97	318	28	10,078
SI	6	883	779	1,298	1,169	1,092	1,065	751	564	395	275	190	133	262	0	8,862
SK	1	669	669	1,491	1,296	1,143	834	588	420	296	171	112	87	191	0	7,968

EUSR on Transmissible Spongiform Encephalopathies in 2015

Country	< 24	24–29	30–35	36–47	48–59	60–71	72–83	84–95	96–107	108–119	120–131	132–143	144–155	> 155	Unknown	Total
UK	4	70	114	731	23,656	22,627	20,073	16,754	13,010	9,984	7,492	6,005	4,798	13,763	225	139,306
Total EU	559	7,533	6,984	17,211	185,119	173,332	144,435	108,957	77,261	54,731	38,518	28,588	22,059	61,839	4,998	932,124
CH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,734[a]	11,734
IC	0	0	0	3	1	0	0	0	3	2	0	0	0	0	0	9
NO	25	40	40	154	1,842	1,730	1,234	708	374	178	115	51	36	60	193	6,780
Total EFTA	25	40	40	157	1,843	1,730	1,234	708	377	180	115	51	36	60	11,927	18,523

(a): For CH, all animals reported as at risk animals were above 48 months of age.

Table A.3: Healthy slaughter (HS) bovine animals in 2015 in the EU and other reporting countries

Country Code	< 24	> 48	> 72	24–29	30–35	36–47	48–59	60–71	72–83	84–95	96–107	108–119	120–131	132–143	144–155	> 155	Unknown	Total
AT	0	0	0	0	224	590	669	671	612	530	415	366	349	247	199	295	0	5,167
BE	0	0	0	1	15	13	23	24	27	31	10	7	7	7	10	37	24	236
BG	0	0	0		2,790	1,878	1,829	1,523	1,286	1,013	771	735	715	513	298	673	0	14,024
CY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CZ	7	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	10
DE	726	0	0	160	123	231	520	519	433	358	24,779	15,620	9,326	5,545	3,300	5,375	4	67,019
DK	0	0	0	0	1	2	8	5	1	4	3	2	1	2	0	4	0	33
EE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
EL	2	0	0	0	85	70	22	49	2,406	2,145	1,617	1,169	885	678	521	1,837	0	11,486
ES	0	0	0	0	2	1	9	13	9	6	21	9	6	3	1	178	0	258
FI	0	0	0	0	0	0	1	2	4	3	0	0	0	0	0	0	0	10
FR	47	0	0	13	31	39	672	582	480	438	325	255	197	147	129	57,893	600	61,848
HR	6	0	0	31	1,582	2,649	2,427	2,494	2,608	2,068	1,623	1,415	1,298	1,064	827	1,602	406	22,100
HU	0	0	0	4	41	58	64	56	56	39	29	45	35	18	12	74	0	531
IE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IT	0	0	0	1	66	37	28	32	32	70	136	78	58	36	34	34	0	642
LT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NL	3	0	0	1	22	20	20	22	22	18	21	9	9	9	6	17	6	205
PL	0	0	0	0	0	0	0	0	0	0	45,964	39,242	30,747	20,024	14,627	33,823	0	184,427
PT	0	0	0	0	0	0	0	0	104	82	62	46	33	30	28	122	0	507
RO	2	0	0	30	9,863	14,782	11,562	9,588	8,086	7,337	7,758	8,346	8,953	6,489	6,304	23,279	0	122,379
SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SI	0	8	0	0	36	14	2	4	3	3	7	0	3	2	1	3	0	78
SK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1

Country Code	< 24	> 48	> 72	24–29	30–35	36–47	48–59	60–71	72–83	84–95	96–107	108–119	120–131	132–143	144–155	> 155	Unknown	Total
UK	0	0	0	1	30	10	37	1	0	1	5	4	1	0	0	6	0	96
Total EU	793	0	0	242	14,911	20,394	17,893	15,585	16,170	14,146	83,548	67,348	52,623	34,814	26,298	125,253	1,040	491,058
CH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC	0	43	5	0	0	0	0	0	0	16	0	2	0	0	0	0	0	66
NO	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total EFTA	0	43	5	0	0	0	0	0	1	16	0	2	0	0	0	0	0	67

Table A.4: BSE Suspects (SU) in 2015 in the EU and other reporting countries

	< 24	> 24	24–29	30–35	36–47	48–59	60–71	72–83	84–95	96–107	108–119	120–131	132–143	144–155	> 155	Unknown	Total
AT	0	0	1	3	1	4	3	3	4	1	3	1	0	0	1	0	25
BE	0	0	2	1	11	5	10	2	1	1	1	0	0	0	0	0	34
BG	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
CZ	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	3
DE	3	0	1	0	7	102	114	74	67	38	24	16	11	10	33	0	500
DK	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
ES	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	3
FR	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
HR	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
HU	0	0	0	2	2	1	0	0	0	0	0	0	0	0	1	0	6
LU	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2
LV	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
PL	4	0	3	0	2	0	0	1	0	1	1	0	0	0	0	0	12
PT	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
RO	2	0	2	6	8	4	6	3	0	4	1	4	1	2	5	0	48
SE	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
SI	6		0	1	0	0	1	1	1	1	0	1	0	0	0	0	12
Total EU	**18**	**0**	**10**	**16**	**33**	**117**	**134**	**85**	**78**	**49**	**30**	**23**	**12**	**13**	**40**	**0**	**658**
CH	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
IC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total EFTA	**0**	**28**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28**

Table A.5: Active monitoring in relation to the adult bovine population (> 2 years of age) in 2015

	Adult cattle > 2 years[a]	Tested bovine animals At risk[b]	Tested bovine animals HS	Calculated proportion tested bovine animals At risk (%)	Calculated proportion tested bovine animals HS[c](%)
AT	894,050	15,816	5,167	1.77	0.578
BE	1,261,350	24,455	236	1.94	0.019
BG	388,240	2,067	14,024	0.53	3.612
CY	28,720	949	–	3.30	–
CZ	653,700	20,082	10	3.07	0.002
DE	5,805,970	151,381	67,019	2.61	1.154
DK	726,000	19,478	33	2.68	0.005
EE	133,300	3,632	1	2.72	–
EL	325,000	1,551	11,486	0.48	3.534
ES	3,071,890	60,181	258	1.96	0.008
FI	374,280	11,566	10	3.09	0.003
FR	10,327,000	206,631	61,848	2.00	0.599
HR	219,000	7,343	22,100	3.35	10.091
HU	421,000	11,903	531	2.83	0.126
IE	2,736,570	51,446	–	1.88	–
IT	3,098,580	54,347	642	1.75	0.021
LT	385,400	3,704	–	0.96	–
LU	102,330	2,203	–	2.15	–
LV	229,320	3,298	–	1.44	–
MT	7,200	200	–	2.78	–
NL	1,948,000	50,200	199	2.58	0.010
PL	2,614,090	38,382	184,427	1.47	7.055
PT	855,800	21,053	507	2.46	0.059
RO	1,356,500	4,036	122,379	0.30	9.022
SE	619,010	10,078	–	1.63	–
SI	202,310	8,862	78	4.38	0.039
SK	236,330	7,968	1	3.37	–
UK	4,477,000	139,306	96	3.11	0.002
Total EU	**43,497,940**	**932,118**	**491,052**	**2.14**	**1.13**

–: Not applicable.
(a): Eurostat August 2016.
(b): At risk animals is the sum of Fallen stock (FS), Emergency Slaughter (ES) and clinical signs at ante mortem (AM).
(c): The calculated proportion of is not relevant for those Member States which have stopped testing healthy slaughtered cattle.