



# **Better Training for Safer Food** *Initiative*

## **Eradication measures for TSEs**

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## Topics Covered

- *Eradication measures for TSEs*
  - **BSE in cattle**
  - **BSE in small ruminants**
  - **Scrapie in sheep and goats**
    - Classical Scrapie
    - Atypical Scrapie
  - **Breeding Programmes**
  - **EFSA Opinion on Scrapie**

## Eradication of TSEs

- *Eradication programme has been very successful for TSEs*
- *Decrease of BSE cases from 35,080 in 1993 to 7 cases in 2013*
- *Prevalence of Scrapie cases in ovines from 44.4 cases per 10,000 animals tested in 2002 to 10.9 cases in 2012*
- *Decrease in prevalence of Scrapie cases in caprines from 4.8 cases per 10,000 animals tested in 2002 to 2.5 cases in 2012*

## Eradication of TSEs

- *2013; the overall prevalence of TSE in sheep is higher than in goats in the EU (CY and EL excluded).*
  - *Prevalence in tested animals not slaughtered for human consumption (risk animals, mainly fallen stock) used to be significantly higher than in healthy slaughtered animals in the past.*
- 2013; the prevalence in the group slaughtered for human consumption is however higher than in the group not slaughtered for human consumption, both in sheep and goats.*



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## Eradication Measures

- *Eradication of BSE in bovines is different from the eradication of Scrapie in small ruminants*
  - **Epidemiology of the disease**
  - **Distribution of prions within the different organs in the carcass**

# Legislation

- *Regulation (EC) 999/2001*
- *Regulation (EU) 630/2013 (recent amendment)*
- *Articles 12 & 13*
- *Annex VII*
  
- *National legislation transposing the EU Regulation,*
- *Contingency Planning for BSE (Art 14)*
- *Contingency Planning for TSE in small ruminants (Art 14)*

## Eradication Measures

- *Positive TSE cases generally as a result of*
  - **Clinical suspects on farm**
  - **Clinical suspects at slaughterhouses**
  - **Non negative rapid test results**
    - Slaughterhouse
    - Fallen animal

# TSE/BSE Suspects

***Current legal provisions: Article 12 of Regulation (EC) No. 999/2001***

***Clinical suspect definition (Article 3(h))***

*TSE/BSE clinical suspects reported by animal owner, veterinarian (PVP) on the farm or official veterinarian at the slaughterhouse carrying out the ante-mortem examination of the animal prior to slaughter*

***Suspicion of BSE in a diagnostic laboratory (Article 3(h))***

TSE/BSE shall be suspected in a diagnostic laboratory in case of an inconclusive or positive result (also on re-examining the sample) obtained by the rapid post-mortem test for TSE/BSE (slaughtered animal or fallen stock)



# TSE/BSE Suspects

## **Article 12, Regulation 999/2001**

*Any animal suspected of being infected by a TSE shall be either*

- *placed under an official movement restriction until the results of a clinical and epidemiological examination carried out by the competent authority are known, or killed for laboratory examination under official control*
  - *...If a BSE is **officially suspected** in bovine animal at a holding in a Member State, all other bovine animals at that holding shall be placed under an official movement restriction until the results are available*
  - *... If a TSE is **officially suspected** in an ovine or caprine animal at a holding in a Member State, all other ovine and caprine animals at that holding shall be placed under an official movement restriction until the results are available*
- ...other holdings or only the holding of exposure shall be placed under official control depending on the epidemiological information available*

# TSE Suspect Measures

## ***On farm measures on suspicion of TSE:***

- *Epidemiological investigation **at the holding where case is suspected,***
- *measures instituted at other holdings, where applicable*

## ***Movement restrictions:***

- *Holding restricted; provisional ban on trade to and from the holding until results are known or animal no longer regarded as a suspect*
- *reporting of and submission of all eligible fallen stock at holding to the competent authority for TSE sampling.*

*Milk and milk products derived from ovine and caprine animals at the holding placed under official control, and which have remained at the holding from the date of suspecting TSE and pending the confirmatory test results, shall **only be used within that holding***

# Measures after official suspicion of BSE in bovines

- Measures at the slaughterhouse
  - **Measures at suspicion of BSE during the ante-mortem**
    - Official veterinarian at the slaughterhouse shall prohibit the slaughter of an animal clinically suspected of BSE. Suspect animal shall be killed outside of the food chain and tested to BSE
  - ***Measures at suspicion of BSE by the rapid test***
    - *The body, excluding the head, of the animal suspected of BSE by the rapid test shall be treated as ABP category 1 material (SRM). The head of suspect animal shall be submitted to the NRL for confirmatory testing.*
    - *Carcass of the animal slaughtered immediately before the suspect animal and two subsequent slaughtered animal carcasses shall be detained – disposed as Category 1 material if BSE is confirmed. (slaughter plant may not have the facility to store the carcasses pending the confirmatory result)*



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# TSE/BSE Confirmatory Results

*Confirmation - NO:*

- all the restriction measures, which have been instituted, are cancelled*

*Confirmation - YES:*

- implementing of measures in accordance with Article 13 of Regulation 999/2001/EC and Annex VII to that Regulation*

# Measures after TSE confirmation in bovines

**Legal basis:** Article 13, point 1(a) and point 2.1. Annex VII, Regulation (EC) No. 999/2001

- **restriction measures remain in place** pending the implementation of measures referred in paragraph 1(b) and 1 (c)
- **inspection at the holding, full epidemiological investigation including identifying all the animals at risk and possible origin of the disease) i.e. cohorts and progeny**
- **disposal of all body parts from the affected animal in accordance with Animal by Products Regulation (excluding the materials required for the additional investigations) Regulation (EC) 1069/2009**

# Measures after BSE confirmation in bovines

## Identifying all animals at risk

- – the “cohort” means a group of bovine animals including:
  - (i) 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; and
  - (ii) 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;
- progeny born within two years prior to, or after, the onset of the disease

# Measures after BSE confirmation in bovines

- **culling and disposing of all animals at risk (cohort, progeny born within the last two years) outside the food chain ASAP**
- **derogations:**
  - **not to kill the cohort if animals forming the cohort did not have access to the same feed and**
  - **defer the killing – bulls ,**
  - **derogation for MS to kill the cohort at the end of productive life (DE, ES)**
- **compensations to owners.**
- **record the case on the competent authority's data system; (AHCS)**
- **announcement of the case EU, OIE**
  
- **Measures at the slaughterhouse!!!**

# Eradication of BSE in small ruminants

## Point 2.2.1. Chapter B, Annex VII

Killing and complete destruction of animals (parents, progeny of the female animals, all caprine and ovine animals), embryos and ova

Milk and milk products derived from the animals to be destroyed which were present on the holding between the date of confirmation that BSE can not be excluded and the date of the complete destruction of the animals **shall be disposed in accordance to Article 12 of ABP Regulation**



# Eradication of classical Scrapie

- *Regulation (EU) 630/2013*
  - **Amendment to Regulation (EC) 999/2001**
  - **Point 2.2.2. Chapter B, Annex VII**

# Eradication of classical Scrapie

*Scrapie now regarded as animal health disease although the risk to public health cannot be regarded as being totally non-existent*

- Classical Scrapie (CS):
  - **genetic resistance to CS in sheep is well known**
  - can be obtained by ingesting contaminated feed (milk, colostrum)
  - can spread between animals, most probably at parturition time through infected foetal fluids
- Atypical Scrapie (AS) shows little tendency for spreading, occurs sporadically, in individual animals and usually in older animals

*The eradication measures are different*



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# Eradication of classical Scrapie

(NSP)	resistance	Genotype
1.	(most resistant)	ARR/ARR
2.	(resistant)	ARR/ARQ, ARR/AHQ, ARR/ARH
3.	(little resistant)	AHQ/AHQ, AHQ/ARH, AHQ/ARQ, ARH/ARH, ARH/ARQ, ARQ/ARQ, ARK/ARK
4.	(susceptible)	ARR/VRQ
5.	(highly susceptible)	AHQ/VRQ, ARH/VRQ, ARQ/VRQ, VRQ/VRQ, VRR/VRR

# Measures after confirmation of Scrapie

- **identifying all animals at risk**
  - all other ovine and caprine animals on the holding
  - other holdings if deemed necessary following epidemiological investigation
  - parents and last progeny if a female animal

# Conditions applying to a classical Scrapie Holding

## Where BSE and atypical scrapie has been excluded

### ***Milk and milk products derived from animals on farm shall only be***

- Fed to ruminant animals on that holding

### ***Milk and milk products on the holding traded within that MS shall only be used for the feeding of non –ruminant animals***

- Where no ruminant animals are kept
- The products are moved and labelled in accordance with the ABP Legislation
- *The commercial document accompanying consignments of such milk and milk products and any packaging containing such consignments shall be clearly marked with the words: 'shall not be fed to ruminants'.*

There is no restriction to use for human consumption milk from flocks under scrapie eradication. Point 2.2.2.a) of chapter B of Annex VII only foresees restrictions for using such milk intended to be used as feed.

# Eradication measures for classical Scrapie

- *3 options available depending on conditions on the holding*
- *Option 1*
  - **Full depopulation; Killing and complete destruction of all small ruminant animals on the holding.**
- *Option 2*
  - **Limited depopulation; killing and complete destruction of susceptible animals**
- *Option 3*
  - **No depopulation**

# Eradication measures for classical Scrapie

## ***Option 1***

- *Full depopulation, killing and complete destruction without delay of all animals, embryos and ovas on the holding*
  - **Animals > 18 months of age shall be sampled and tested for TSEs (intensive programme of testing)**
  - **Prion protein genotyping of all ovine animals on the holding up to a maximum of 50 animals**

### *Derogation*

**Slaughter of all animals within the food chain without delay provided**

All animals slaughtered for human consumption within the MS

Intensive programme of testing with negative results prior to using carcass for food

# Eradication measures for classical Scrapie

- *Exempt lambs and kids provided they are slaughtered under 3 months of age*
- ***Following the full depopulation the following shall apply to the holding***
  - **Intensified testing programme**
  - **Restriction of the type of animal that can be introduced onto the holding**
    - Male ovine animals of the homozygous ARR genotype
    - Female animals carrying at least one ARR allele and no VRQ allele
    - Caprine animals following a complete cleaning and disinfection of the infected premises
    - Semen from Category 1 rams
    - Embryos carrying one ARR allele and no VRQ allele
- *Movement of animals from the holding also restricted*



# Eradication measures for classical Scrapie

## ***Option 2; Partial depopulation***

- *The determination of the prion protein genotype of all ovine animals on the holding*
- *Once genotyped the following genotypes are excluded from killing and disposal*
  - **Breeding rams of the ARR/ARR (homozygous) genotype**
  - **Breeding ewes carrying at least one ARR allele and no VRQ allele**
  - **Ovine animals carrying one ARR allele intended for human consumption**
  - **Lambs and kids less than 3 months of age at the time of slaughter if the CA so decides**

# Eradication measures for classical Scrapie

- ***The genotyped animals > 18 months when being killed and disposed of are subjected to TSE sampling and testing***
- ***Derogation***
- *Replace the killing and complete destruction by allowing them for slaughter for human consumption provided they are subjected to the intensified testing programme with negative results*

***Movement of animals onto the holding and from the holding also restricted - same conditions as before in option 1***

# Eradication measures for classical Scrapie

## ***Option 3; No depopulation***

- *CA may decide not to kill and completely destroy any of the animals identified on the holding if*
  - Difficult to find genotyped replacements of the specified genotype
  - The frequency of the homozygous ARR allele within the breed is low
  - Inbreeding cannot be avoided
  - "*Deemed necessary*" by the CA following reasoned consideration of all epidemiological factors

# Eradication measures for classical Scrapie

- *Complete records must be kept for each flock availing of **option 3***
- *When additional classical scrapie cases found within the flock the situation should be re-assessed by the CA and eradication strategy changed if necessary*
- *All animals in the flock up to a maximum of 50 should be genotyped within 3 months of the confirmatory date*

# Eradication measures for TSE

- *If the infected animal with the TSE was introduced from another holding, then the CA may introduce eradication measures in that holding instead of, or as well as the holding on which the disease was identified*
- *Commonage land; decision for the CA depending on the epidemiological findings*
- *Where there is more than one flock on a single holding the CA may decide on how many of the flocks to apply eradication measures to again based on epidemiological factors*

# Eradication measures for classical Scrapie post killing or slaughtering

- *Intensified testing programme for 2 years*
- *Limited movement of animals onto the holding*
- *Limited movement of germinal products onto the holding*
- *Limited movement of animals off the holding*
- *Also lambs and kids may be moved off the holding to one other holding for fattening prior to slaughter provided the holding of destination*
  - **Contains no other ovine or caprine animals**
  - **the animals will be killed in the MS before the animals have reached 12 months of age**
- *Movement restrictions shall apply*
  - **Until homozygous ARR level has been achieved for the flock**
  - **Or for 2 years from the date of depopulation for options 1 and 2**
  - **Or in option 3 for a period of 2 years from the date of confirmation or the last classical scrapie case**

# Eradiation measures for Atypical Scrapie

- **Point 2.2.2. Chapter B, Annex VII**
- *Less restrictive measures than for classical scrapie Intensified testing programme for a period of 2 years from the date of confirmation of the last Atypical case on the holding*
- *Should this programme identify a case of classical scrapie then the eradication measures for classical scrapie shall apply from that confirmatory date*

# Breeding Programmes

- Objective
- *To increase the genetic resistance of ovines on the holding against classical scrapie*
- *Using ARR/ARR breeding rams should significantly reduce the incidence of Classical Scrapie*
- *To attain homozygous ARR allele status of all ovines on the holding (gold plate status)*
- *Refer to recent EFSA Scientific opinion on Scrapie situation in EU after 10 years of monitoring and control.*



# Breeding Programmes

- **Framework for recognition of resistant status**
- *Resistance of the participating flock must be recognised*
- *Level 1; All animals within the flock are of the homozygous ARR genotype*
- *Level 2; All of the progeny within the flock are from breeding rams of the homozygous ARR genotype*
- *CA may grant other levels in the framework*
- *CA must carry out regular sampling to verify the flock level status both at the slaughterhouse and on the holding*



# Very new ESFA opinion on Scrapie Eradication measures

**Cristiana Maurella**

## ***Very new EFSA Opinion on scrapie***

### ***Five questions posed to EFSA***

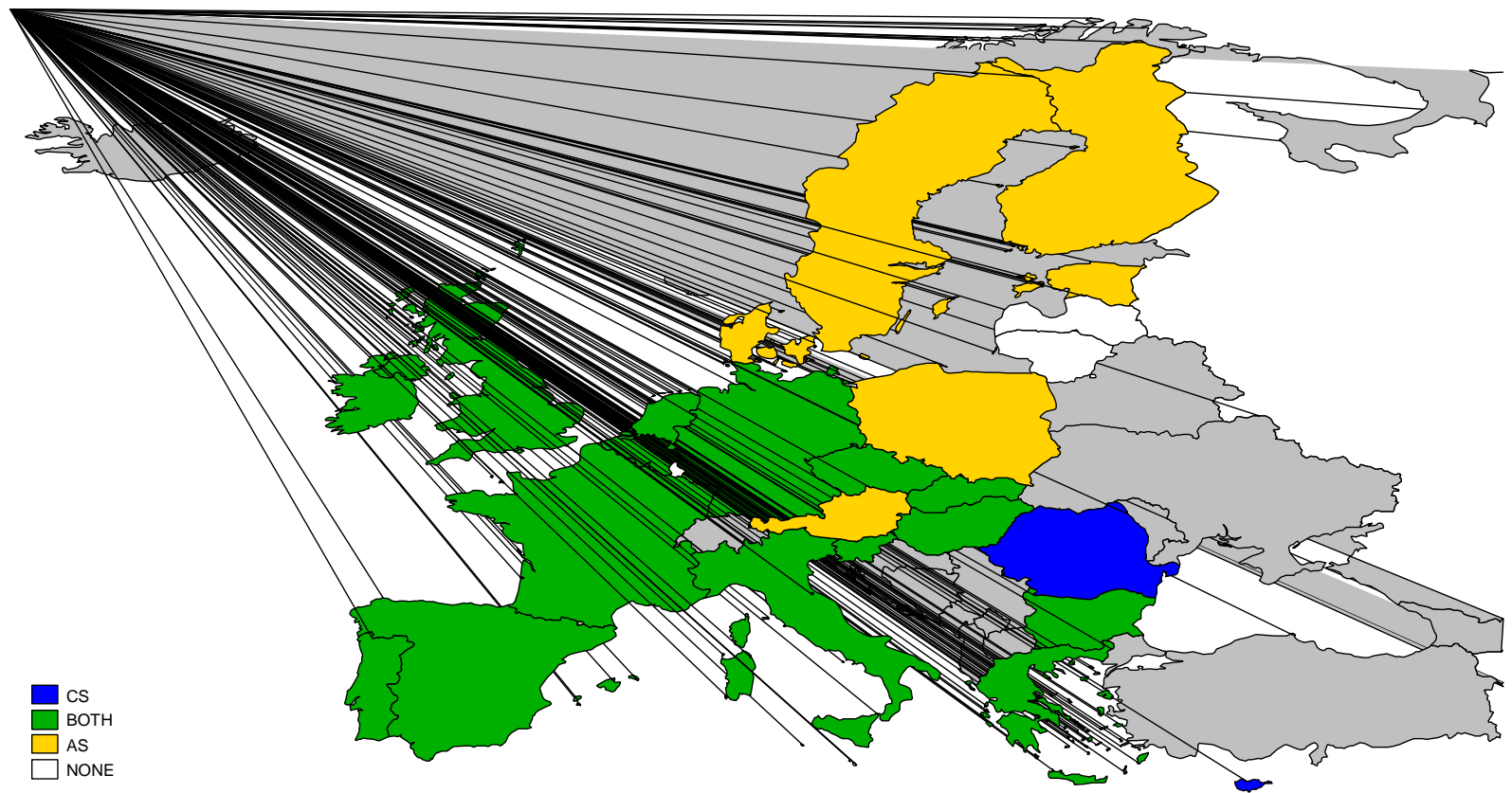
***ToR 5: In a context where no breeding programme is implemented, are the present mandatory measures in terms of active monitoring, eradication and control of Classical scrapie effective to achieve a decline of this disease and its eradication on the long term?***

***What additional measures can EFSA recommend in view of achieving the eradication of Classical scrapie in the MS?***



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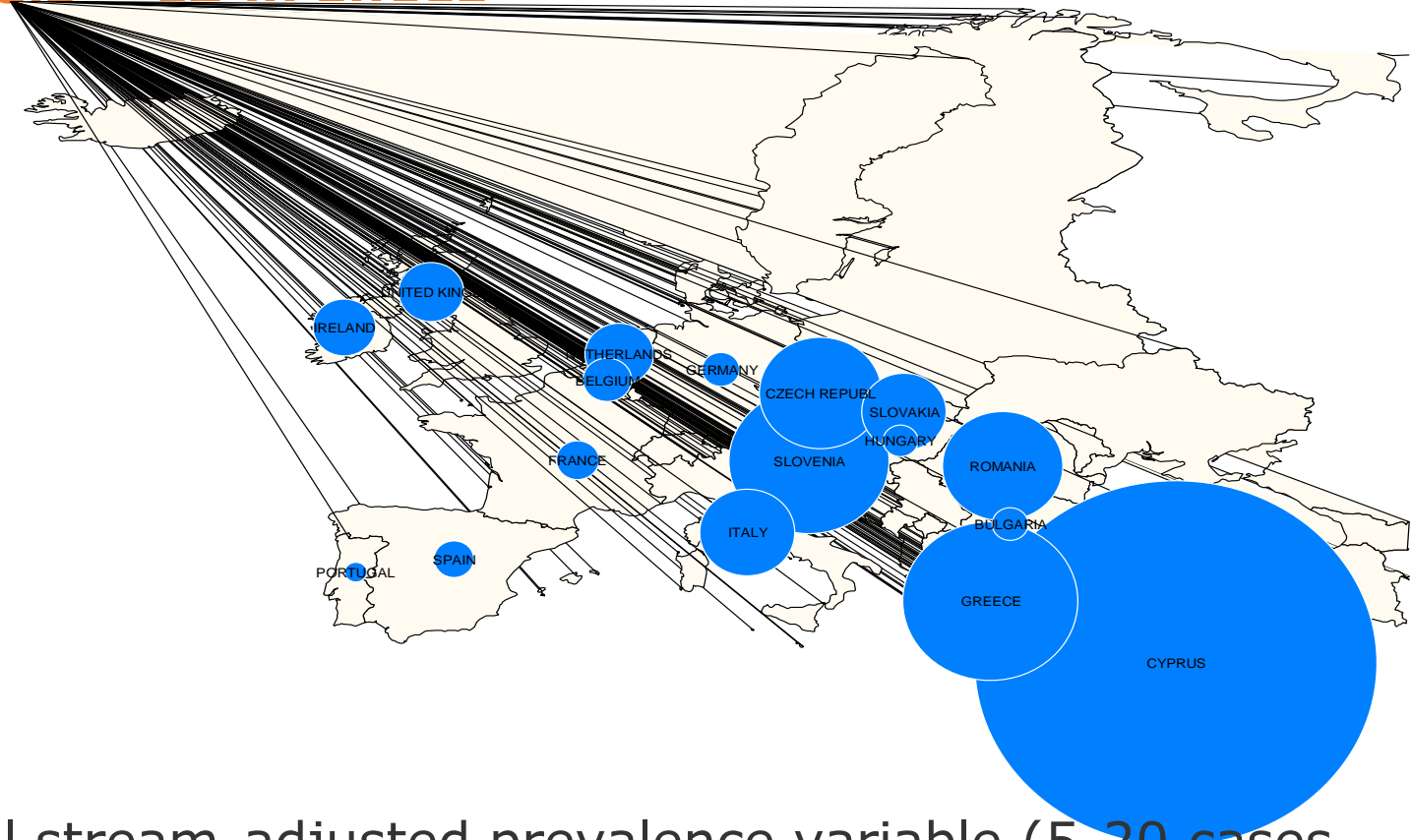
## *Distribution of scrapie – sheep*





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## Trend analysis – CS in sheep



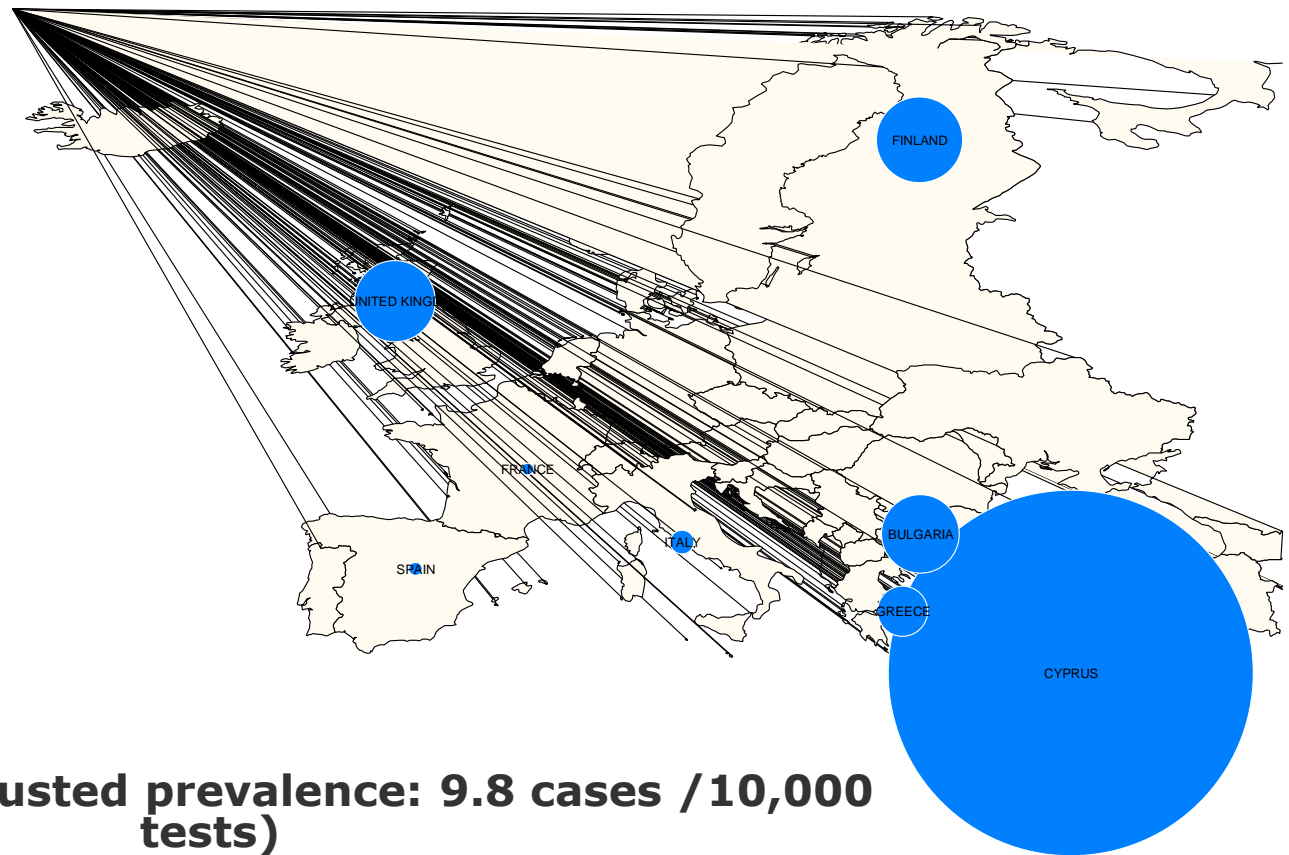
Annual stream-adjusted prevalence variable (5-20 cases /10,000 tests)

Heterogeneous situation → overall trend not meaningful



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## *Trend analysis – CS in goats*



**Overall stream-adjusted prevalence: 9.8 cases / 10,000 tests)**

**After excluding CY: 2.2 cases / 10,000 tests**

## ***TOR5: ADDITIONAL ERADICATION MEASURES11***

### ***Approach***

*Series of recommendations on additional/alternative measures to control/eradicate Classical scrapie:*

**Surveillance and control**

**Breeding for resistance**

**Knowledge transfer**

## **TOR5: ADDITIONAL ERADICATION MEASURES**

### **Surveillance and control**

#### **4.7.1.1.**

#### **Surveillance to detect cases of disease and facilitate its control**

It is recommended that:

The detection of infected flocks and subsequent disease control will be improved by additional risk-based targeted surveillance activities and/or a substantial increase in the tested fraction of the population.

If additional targeted risk-based surveillance is implemented, data collection enables the discrimination between results generated through the continuation of the current surveillance and any additional targeted risk-based surveillance.

Even after restrictions are lifted, infected flocks are considered at risk and targeted for enhanced surveillance, unless they are composed entirely of resistant animals.



## **TOR5: ADDITIONAL ERADICATION MEASURES**

### **Surveillance and control**

#### **4.7.1.2.**

#### **Surveillance to monitor the epidemiological evolution in time and space**

It is recommended that:

- TSE surveillance programmes in small ruminants:
  - are adapted to each MS (number of tests, targeted populations);
  - have a standardised audit/verification system to ensure the correct implementation of control measures;
  - include a data collection system facilitating the estimation of prevalence at both population and flock/herd level;
  - systematically and accurately collect raw data regarding major confounding factors (i.e. age in years, stream).

## ***TOR5: ADDITIONAL ERADICATION MEASURES***

### **Surveillance and control**

#### **4.7.1.3.**

#### **Preventing the reoccurrence of scrapie in infected flocks**

It is recommended that:

- Long term/permanent compulsory use of ARR homozygous rams is required in the holdings where CS has been detected.

#### **4.7.1.4.**

#### **Identification of animals and epidemiological investigation of infected flocks**

It is recommended that:

- Individual identification of small ruminants is implemented effectively, as part of a functional traceability system.



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*Thank you for your attention*



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## **Better Training for Safer Food BTSF**

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