



Ministry of Economic Affairs,  
Agriculture and Innovation

# Schmallenberg virus in the Netherlands

## 'What's up?'

SCoFAH Animal health &  
Welfare

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January 11th, 2012



# Unexplained disease outbreak cattle I

- August/September 2011
- Acutely diseased cattle reported to Animal Health Service
- Milk producing cattle
- Severe diarrhoea and milk drop
- Eastern part of the Netherlands and some similar symptoms also in border region Germany (NRW)





# Unexplained disease outbreak cattle II

- Clinical and laboratory investigations
- Farms sampled, blood and faecal samples
- Tests: bacteriology, parasitology, electron microscopy, microarray viruses, RT-PCR
- None of the detected agents clearly associated with clinical symptoms
- Symptoms disappeared after several days
- Ordinary 'Autumn-fever'?





# Malformations in newborn lambs

- Monitoring programme health status small ruminants, first information to Animal health service (AHS)
- Farm with congenital malformations
- Visit on December 1st, samples taken
- Standardised diagnostics methods, examination foetus and blood and tissue samples
- Germany detects segments Orthobunya virus, Akabane like, provisional naming: 'Schmallenberg-virus'





## Week between 5-9 December

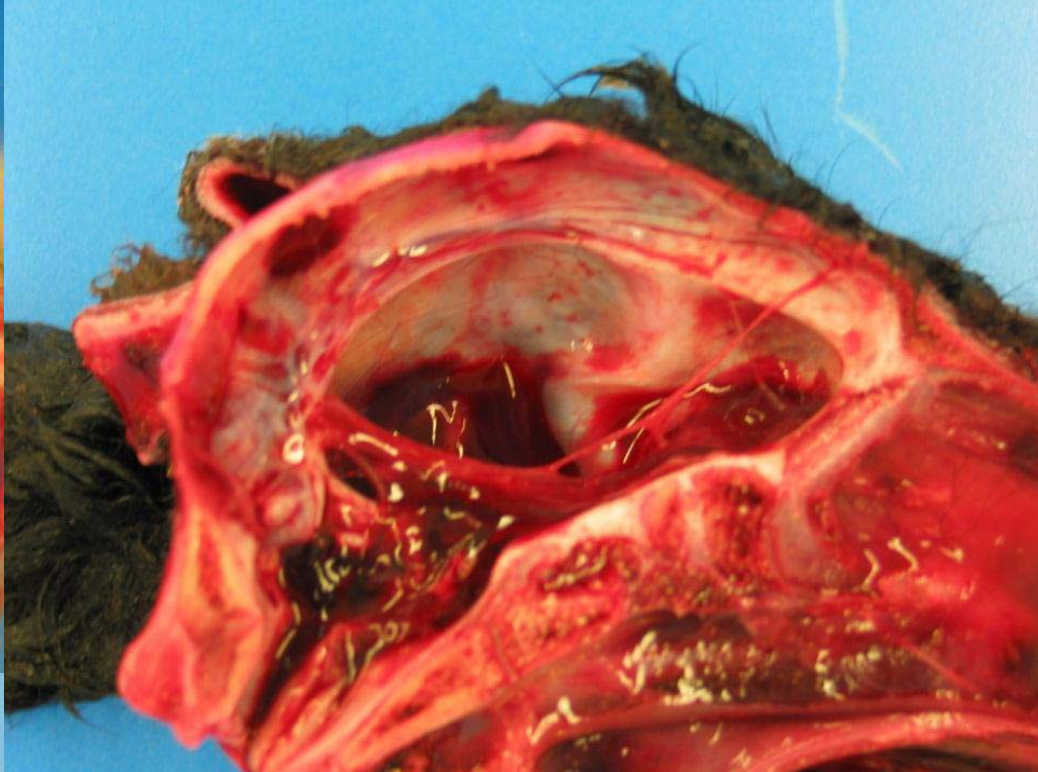
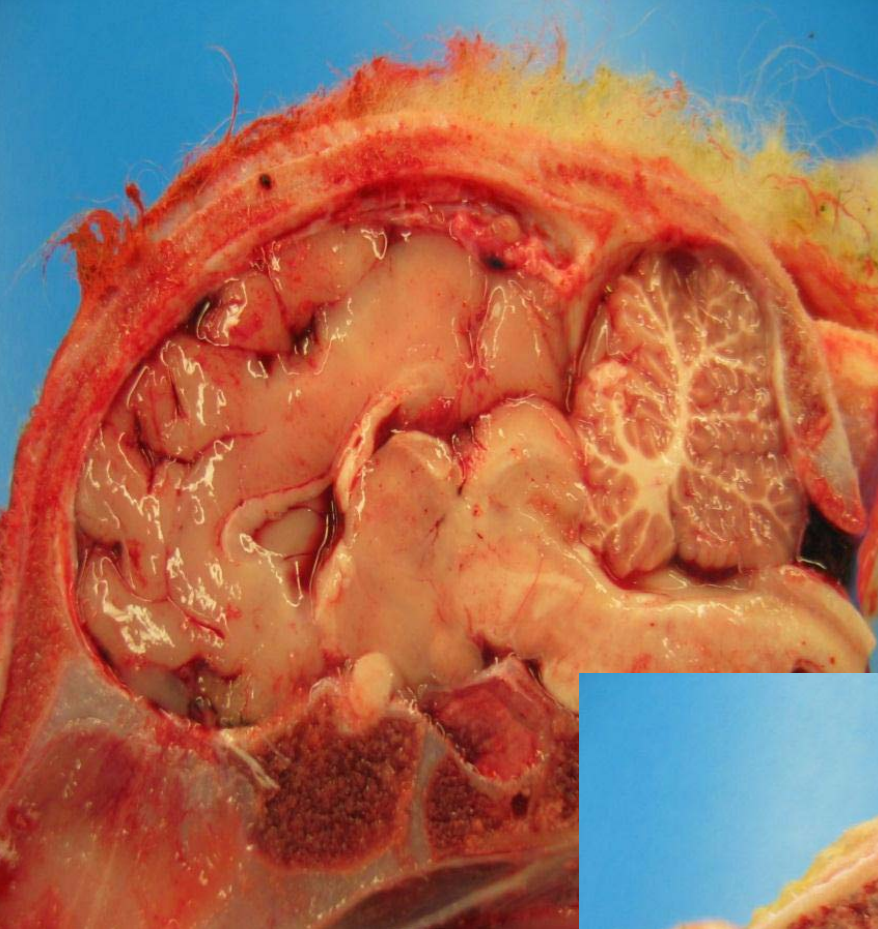
- 4 New cases of farms with lambs with congenital defects
- Authorities get informed
- Farms are visited and animals are sampled
- Dutch veterinary practitioners get informed - December 9
- Samples to the Central Veterinary Institute (CVI)

# Clinical signs

Congenital defects:

- Arthrogryposis
- Hydranencephaly
- Ankylosis
- Torticollis
- Scoliosis







## Detection of 'Schmallenberg-virus' in cattle

- On December 8th, 18/50 blood-samples tested positive
- Samples taken in Aug/Sept from 8 farms of cattle showing clinical diarrhoea, fever and reduced milk yield
- None of blood samples of controls positive: 0/115
- Conclusion: 'Schmallenberg-virus' associated with clinical diarrhoea cattle East-Netherlands, Sept/Aug







## Week between 12-15 December

- 16 Cases of lamb malformations reported
- Farms are visited and several animals sampled
- Contact with veterinarians in Belgium and Germany
- CVI detects 'Schmallenberg-virus' in brains of two lambs, by RT-PCR



# Sheep farms concerned

- Lambs are mainly born at 135-151 days; normal 147
- Lambs are sometimes born alive
- 4 Farms also had a lambing period in November; in all cases without problems
- Several breeds (Suffolk, Texel, Blue Texel, Dairy, Flevolander, Swifter, Blessumer, cross-breds)
- As well synchronised as non-synchronised sheep



# 'Schmallenberg-virus'

Family: *Bunyaviridae*

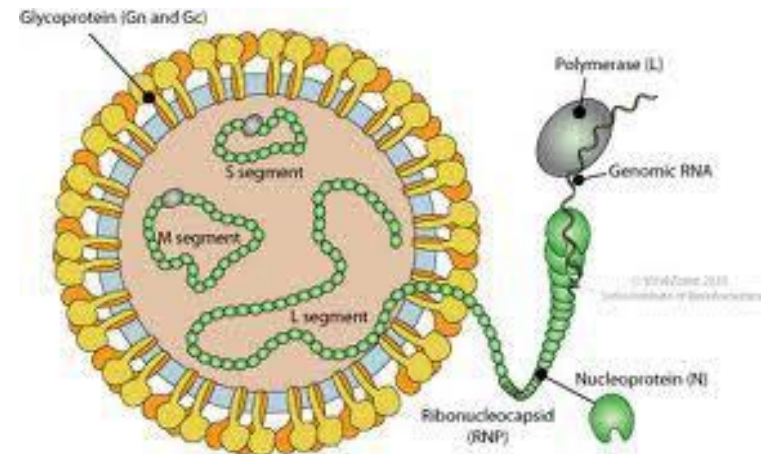
Genus: *Orthobunyaviruses*

Serogroup: Simbu-serogroup

Virus: Schmallenberg virus

*Bunyaviridae*, 5 genera:

- Nairovirus (Crimean-Congo haemorrhagic virus)
- Phlebovirus (Sandflyfever, Rift Valley Fever virus)
- Orthobunyavirus (California encephalitis virus)
- Hantavirus (Sin Nombre virus, Puumala virus) -> robo-borne
- Tospovirus -> no human pathogens





# Orthobunyaviruses – Simbu-serogroup

- 25 Serotypes: Akabane, Aino, Shamonda, Oropouche and Iquitos viruses
- Isolated from insect vectors, cattle and sometimes humans
- Normally mild clinical disease, but fetal infections can induce e.g. abortion or congenital disorders
- All known Orthobunya viruses are vector-borne: Culicoides (Simbu-serogroup) and mosquitoes
- Within Simbu-serogroup, Schmallenberg virus most similar with Akabane and Shamonda viruses





# Schmallenberg virus: zoonotic potential?

- At least 30 Orthobunya viruses have been associated with human disease
- Within Simbu serogroup some zoonotic viruses which cause human outbreaks
- However, Akabane, Shamonda and Aino virus only found in ruminants
- Emergence of new viruses with increased pathogenicity have been described
- According to Dutch health system: no reports of affected humans yet
- Human health experts: 'possibility of zoonotic transmission of Schmallenberg virus is unlikely but cannot be excluded at this stage'
- View publicly endorsed by ECDC



# Measures taken by Authorities

- Frequent reporting to Dutch Parliament, European Commission, OIE, sector and public at large
- Close relations with neighbouring countries: BEL, LUX, GER, FRA and UK
  - CVO level
  - Among scientists

Mid December Minister of Agriculture decides to:

- support additional research
- make the disease notifiable





# Research activities started

- Assigned by Ministry of Agriculture (EL&I) and Ministry of Public Health (VWS)
- Executed by CVI, AHS, RIVM and other Dutch partners and in close cooperation with scientific institutes abroad (like FLI)
- Goals:
  - Develop diagnostics: serum-ELISA and virus neutralization tests
  - Acquire knowledge to develop possible vaccines, in cooperation with pharmaceutical industry
  - Epidemiological survey: possible ways of introduction and virus-distribution
  - Virus characterisation



# Notifiable disease

- Reports to the Netherlands Food and Consumer Product Safety Authority (NVWA)
- Farmers and veterinarians are obliged to notify **congenital malformations in sheep and goat lambs and calves**
- Based on national Animal health law, as of December 20th, 2011
- Aim:
  - To support the epidemiological surveys
  - To gain knowledge in preparation of possible measures
  - To provide reliable information farmers and citizens are asking for





# Results notifications so far

- Number of farms, until January 9th
  - Cattle farms: 73 suspected, no confirmations, 25 pending
  - Sheep/goat farms: 120 suspected, 52 confirmed, 52 pending
- Number of tested and virus confirmed malformed animals so far
  - Calves: 63 calves tested so far, no confirmations yet
  - Sheep lambs: 273 lambs tested, 103 confirmed
  - Goat lambs: 5 lambs tested, 1 confirmed
- Map for distribution throughout the country, next slide:

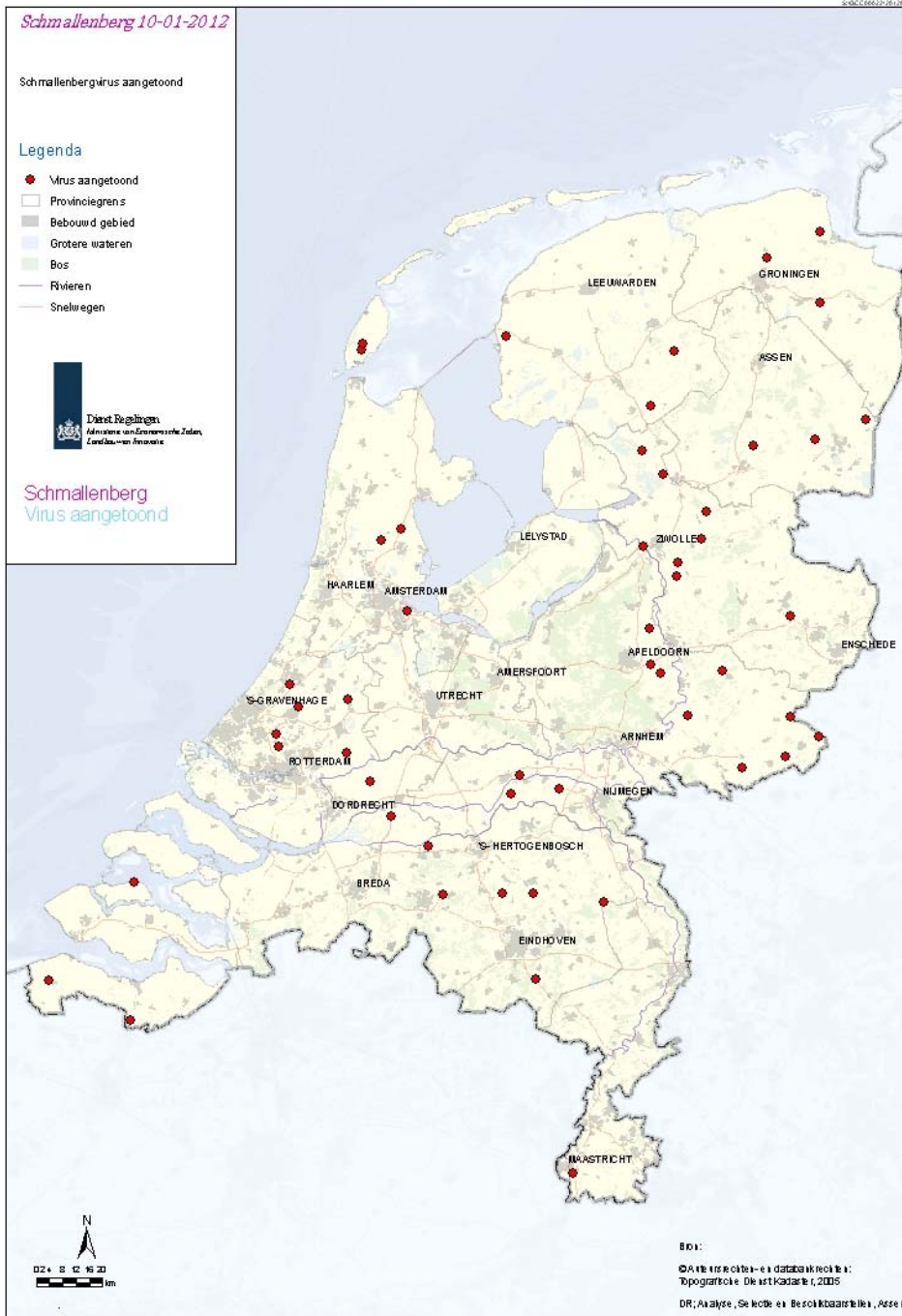
Schmallenbergvirus aangetoond

Legenda

- Virus aangetoond
- Provinciegrens
- Bebouwd gebied
- Grote wateren
- Bos
- Rivieren
- Snelwegen



Schmallenberg  
Virus aangetoond



BRD:  
 ©Afdeling Geografische Informatie en Data van de Rijksdienst voor het Openbaar Bestuur, 2005  
 Topografische Dienst Kadaster, 2005

DR: Analyse, Selectie en Beschikbaarheids, Afdeling



## Requests to the Commission and MS's

- Exchange of information, virus won't limit itself to Northwest Europe
- Support to the scientific research, with respect to content and also financially
- Bring the obligation to notify at a European level, i.e farmers and veterinarians to national authorities & national authorities to European Commission



## Grateful regards

Acknowledgments to:

- NVWA,
- CVI,
- AHS,
- RIVM,
- and others like the German FLI

THANK YOU FOR YOUR ATTENTION

