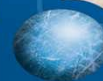
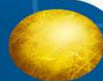
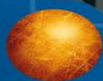




# An acute hemorrhagic syndrome in calves: a new emerging disease

Anja Smolenaars, Petra Kock, Jet Mars, DVM, PhD

Animal Health Service Deventer  
The Netherlands





# GD Animal Health Service Ltd.

since 1919

Mission: supply knowledge on animal health

Surveillance

One of the objectives :  
detection of emerging diseases



# Monitoring “cattle watcher”

Part of the Dutch monitoring and surveillance system

One central phone number for questions and advice

Continuously available veterinary service

GD Bovine Specialists

Unknown diseases (e.g. BT)/ syndromes

- Differential diagnosis
- Pilot study
- Research





**In 2008 we received phone calls about  
bleeding newborn calves**





# Differential diagnosis “bleeders”

- Bovine Viral Diarrhea (thrombocytopenia) (BVDV -2)
- (auto)immune mediated thrombocytopenia (trombocytopenia purpura in pigs)
- Coagulation factor deficiencies
- Coumarin poisoning
- Brackenfern poisoning
- Blood parasites
- Unknown infections
- intoxications / drugs

## Our first suspect was BVDV

- Hemorrhagic diathesis syndrome has been described in cases of acute BVD infection
- However...
  - Majority of our cases BVDV was not found
  - Increase of cases in a short period in newborn calves
  - Only one bleeder calf per herd at a time



**Should we be worried?  
Is it a new disease?  
Or did we miss it before?  
Is it a threat for human health?**

**Pilot study end of 2008**



Pilot study:

asking GP's to call us when they saw bleeder calf,  
send in blood samples,  
and get the calves in for post mortem,  
rule out other diseases

Questionnaire to the farmers



Numbers of cases increasing in 2009

From alerts :  
also cases in Germany

**March 2009**

Germany's Mystery Cow Disease  
Causing Calves to Bleed to Death



03/27/2009 Der Spiegel

**'Holy Mary, Help Us in Our Hour of Need!'**

*“The farmers have discussed everything from poisonous ferns to “decades of abusive inbreeding,” solar panels and the “radiation from radio towers” as possible causes of the illness.”*

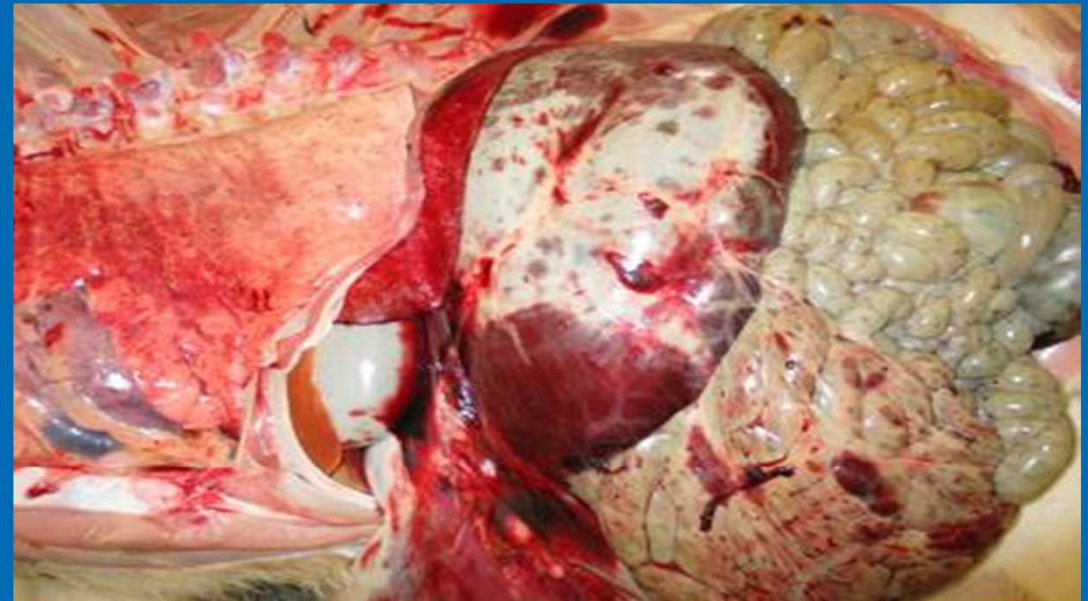
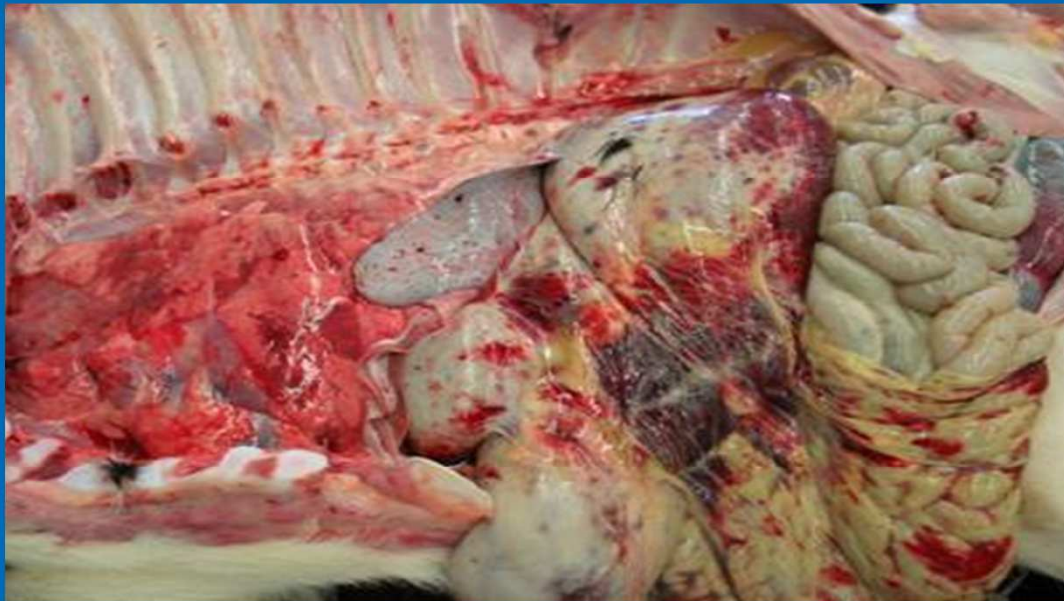
## *Pilot study results: Blood samples*

Severe thrombocytopenia and leucocytopenia  
:pan-cytopenia

- No indication for infection
- No BVDV (several techniques)

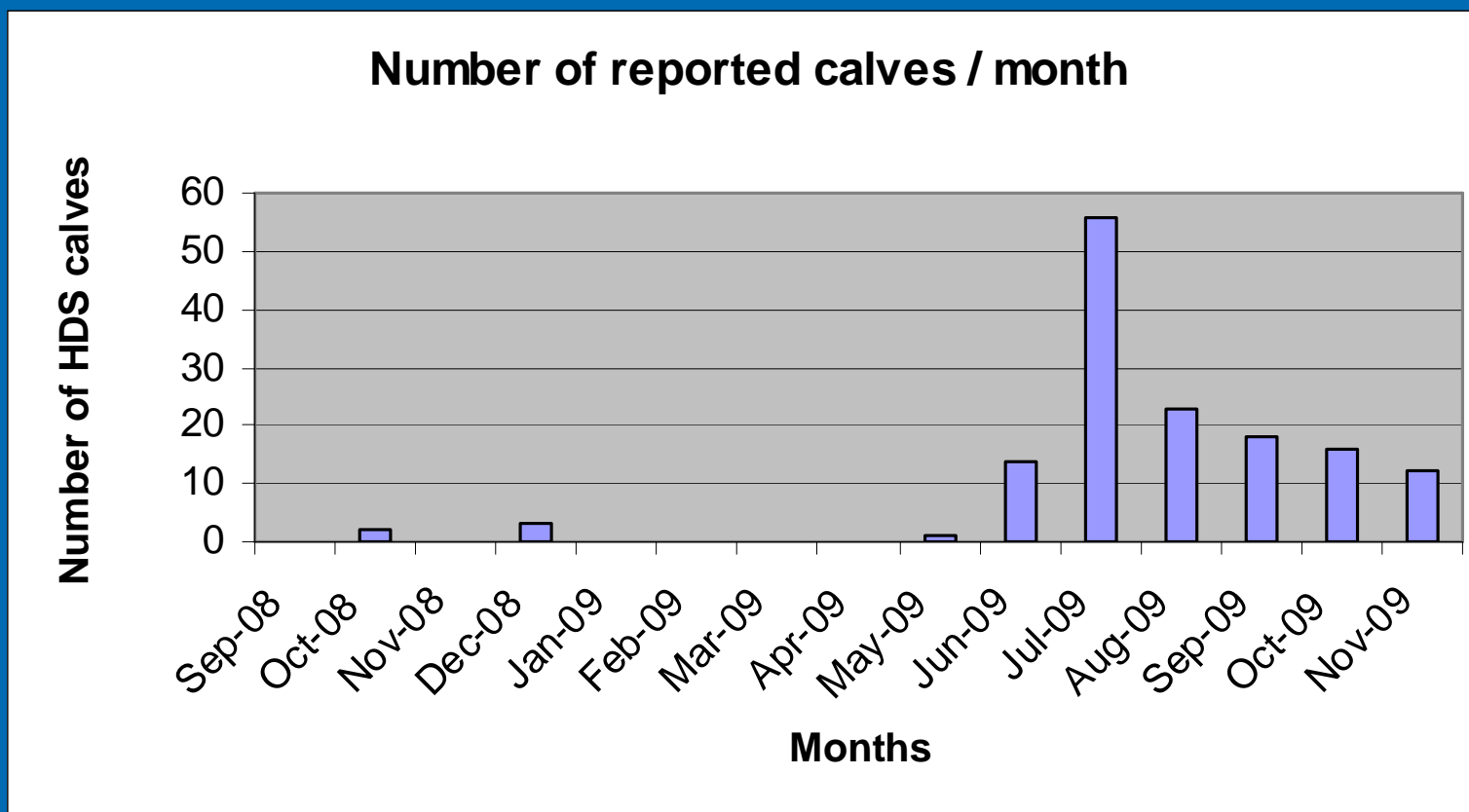
# *Pathology*

- External and internal bleedings
- Aplastic anemia
- bone marrow depression



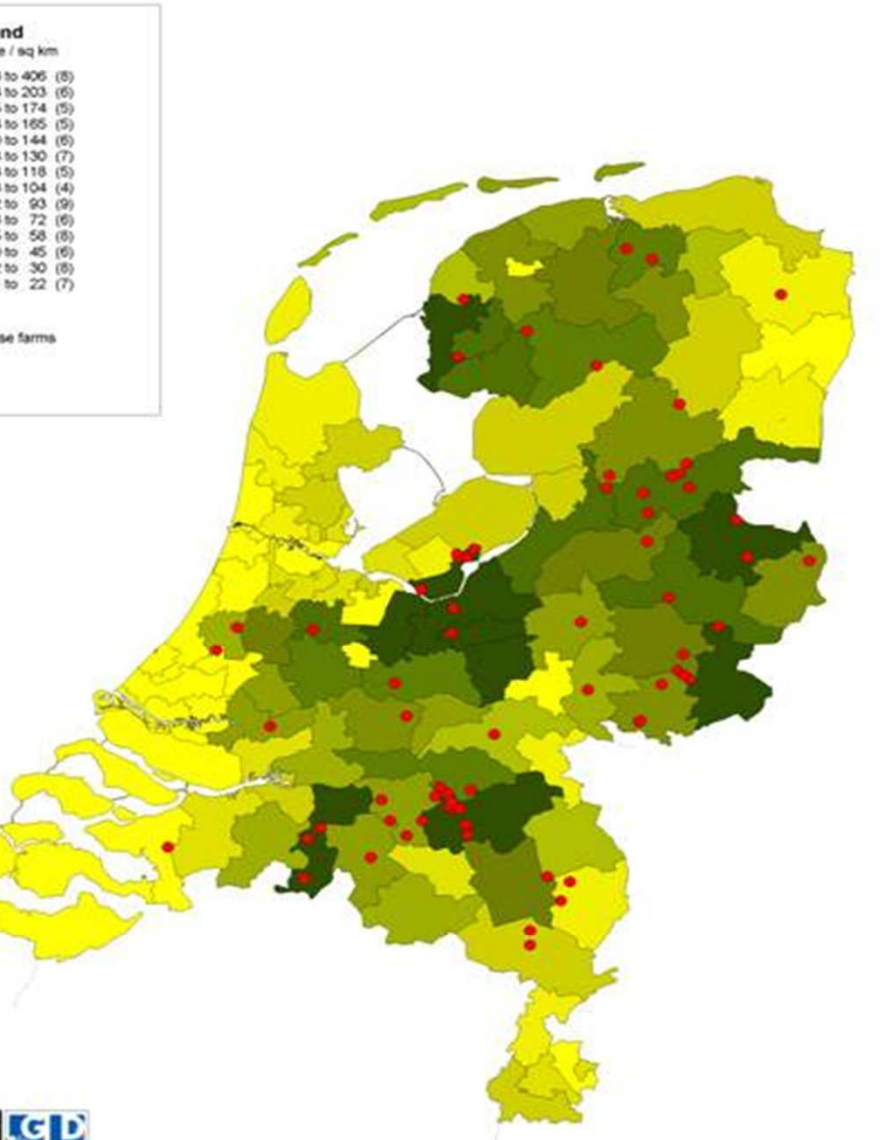


# Distribution of bleeder calves in time



## Distribution of case farms in the Netherlands

Period September 2008 until November 2009

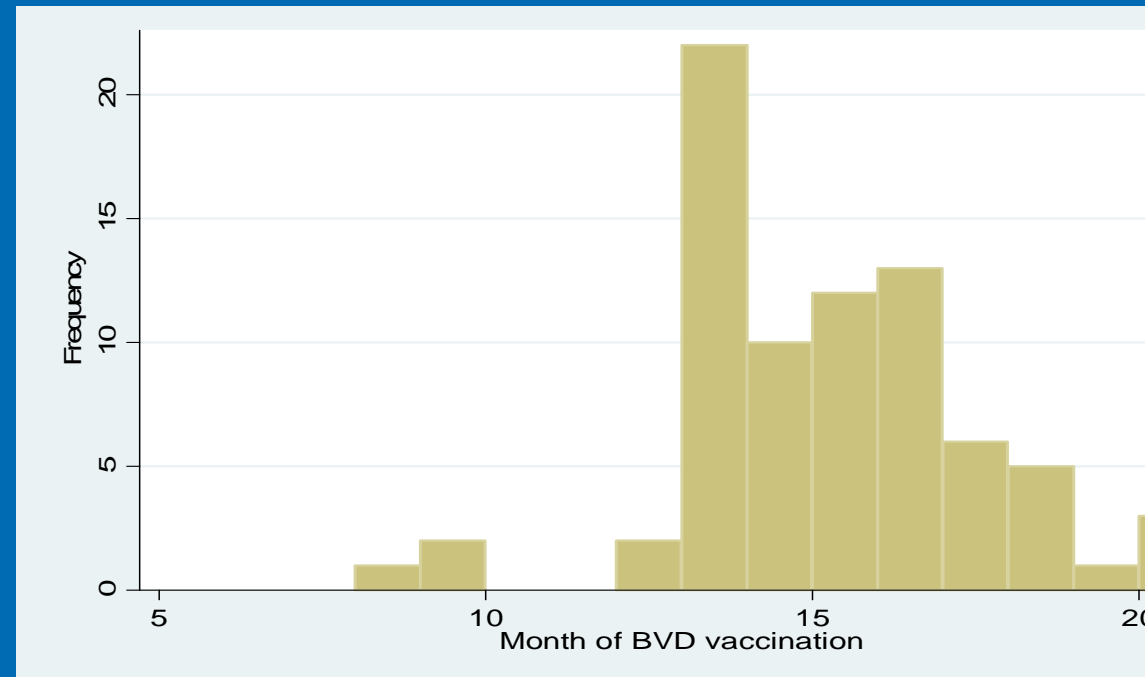
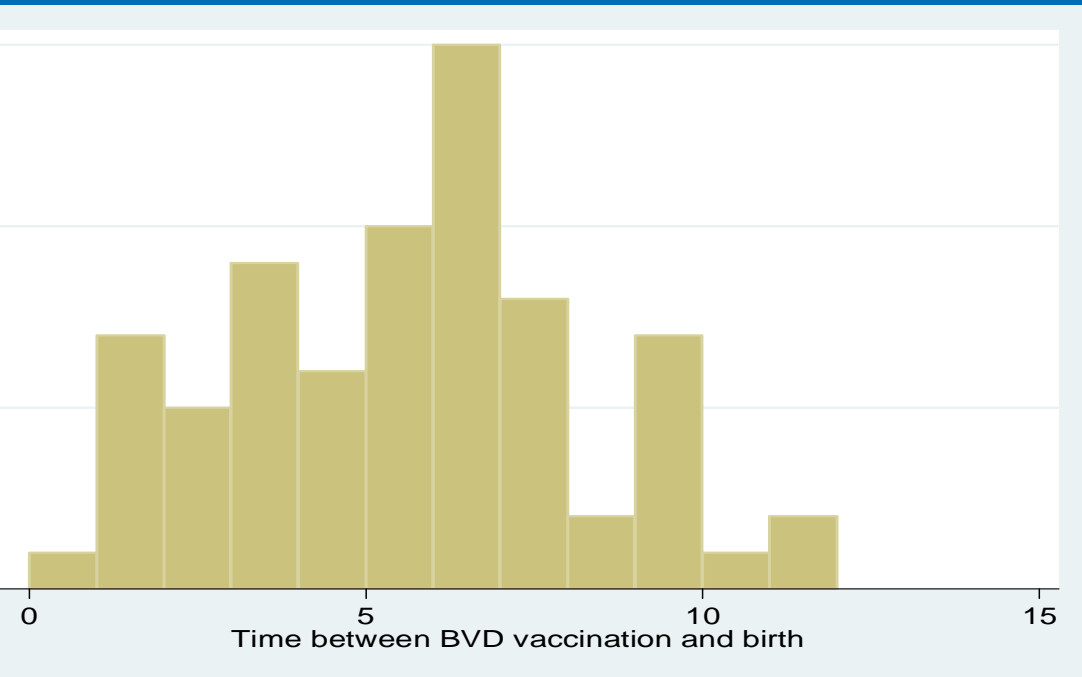


- No common genetic background
- Several breeds
- dams (mothers) of all ages
- No specific medication of calves
- No insecticides/pest control

## *Standard farm vaccinations (not specifically the diseased calves)*

- Bovilis IBR<sup>®</sup> → 10x
- Rispoval 3<sup>®</sup> → 6x  
(BRSV, BVD, PI3)
- Bovipast<sup>®</sup> → 2x  
(BRSV, PI3, *M. haemol*)
- Rotavec<sup>®</sup> → 5x  
(rota, corona, *E coli*)
- BRSV → 4x
- BVD → 59x (90%)
  - Pregsure<sup>®</sup> → 58x
  - Bovilis BVD<sup>®</sup> → 1x
- Bluetongue → 55x (85%) (obl)

# Time of administration of BVD vaccine



no influence of time of vaccination and time of birth, no specific moment during foetal development

## *Puzzling observations / discussion*

88% of the case herds had used Pregsure<sup>®</sup>

Pregsure<sup>®</sup> in NL since 2005 → cases since **2008**.

Millions of doses had been sold, only 100s cases

Change since 2008 in EU → Bluetongue epidemic and vaccination

Combination BT / BVD?



Syndrome has some resemblance syndromes

Babies, Piglets, Foals, Lambs



Some of these syndromes are based on antibodies developed by the mother , which after birth, affect cells of the newborn

\*\*\* a calf is born without antibodies, the newborn receives maternal antibodies in the first colostrum

## *Follow up*

- International European symposium Marseille december 2009
- Data shared (syndrome clearly described) for example: extensive search for toxins, known viruses and bacteria.
- Research was focussed: f.e. Some focussed future research on immunological aspects, or genetic aspects or epidemiological studies, or search for micro-organisms
- Colostrum might be the clue
- Agreed on name: **bovine neonatal pancytopenia (BNP)**
- However no proven cause for BNP

After the symposium,  
many contacts between researchers ;  
relation vaccine/ bleeding syndrome became more  
clear, for example:  
only in countries where Pregsure was used, the  
disease was found.  
Hypothesis: dam developed Ab against some foetal  
factor?

## *Follow up*

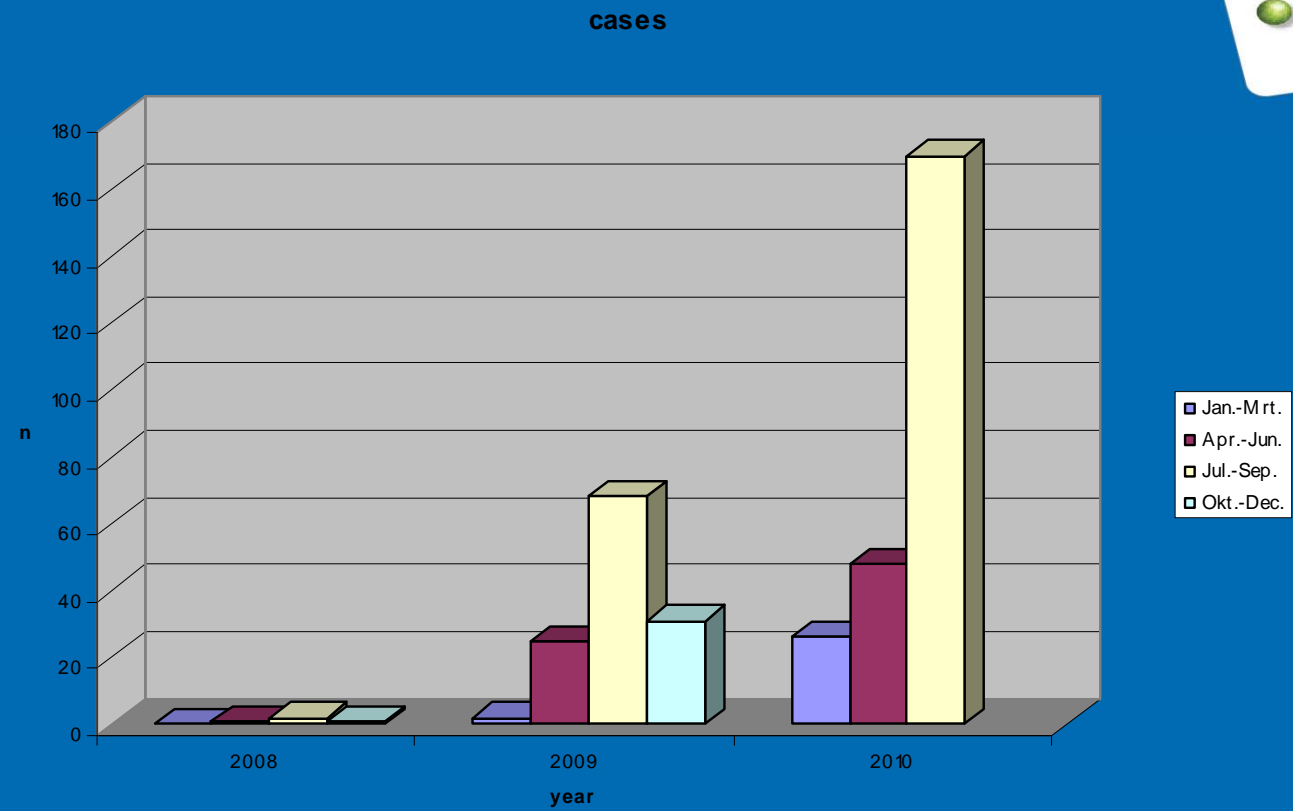
### International Case - control study planned

- Risk factors on farm: why are some farms affected and others not
- Animal risk factors: in some farms only one out of 100 calves affected, whereas all cows were vaccinated

More research on genetic and immunological aspects



# Follow up



Summer 2010 Pfizer took the Pregsure vaccine from the market although causal relation was not proven



# Conclusions

Surveillance system worked

International collaboration important

Sometimes quick actions, even without knowing everything



*Thank you for your attention!*

# The Netherlands - population

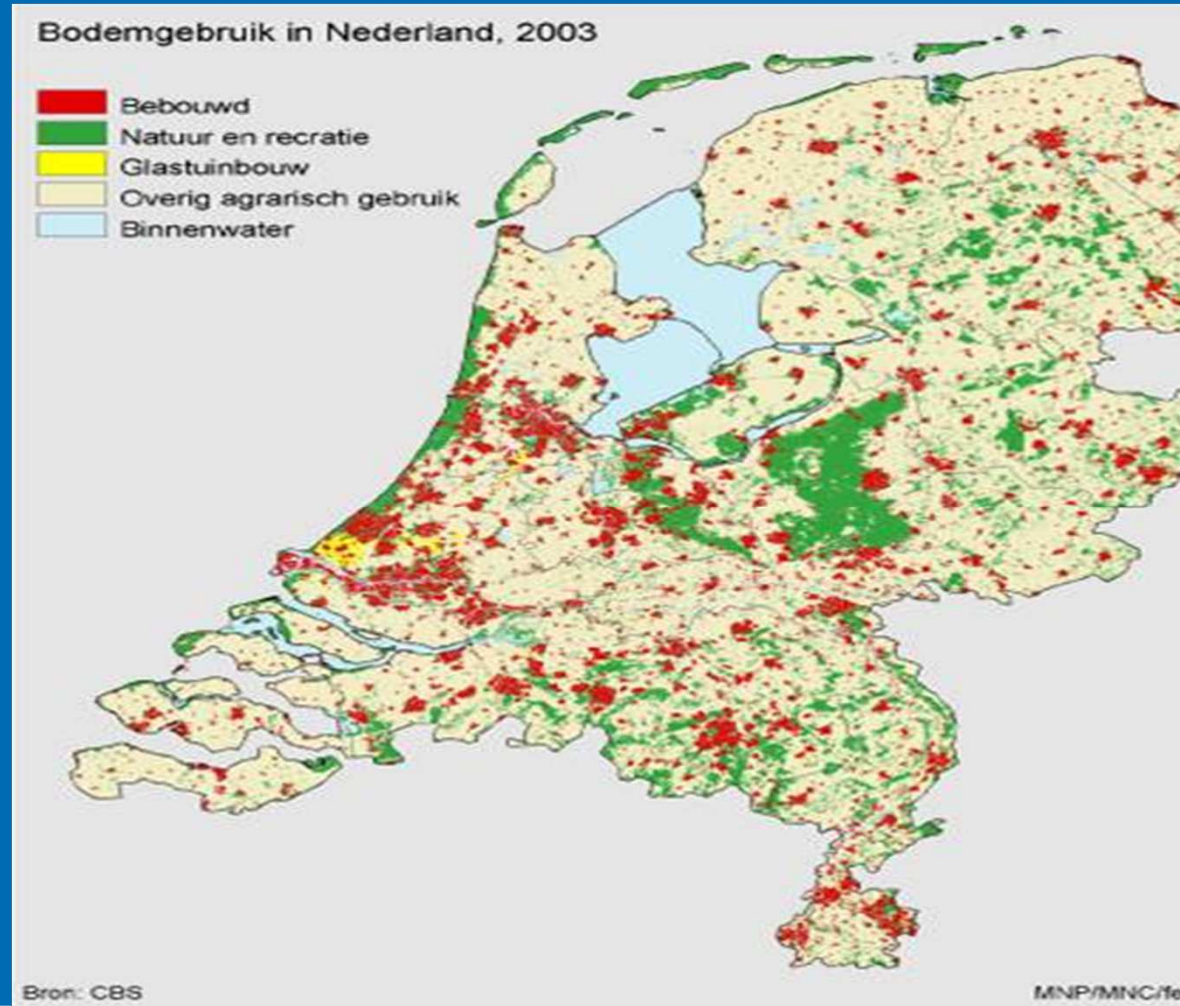
41.000 km<sup>2</sup>

16 million people

93 million chickens

14 million pigs

4 million cattle





# Use of information

VeeKijker



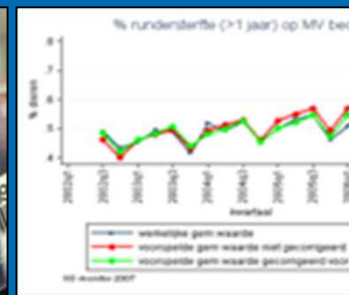
Pathology



Prevalence



Syndrome su



*e-mail or telephone to authorities  
immediate action*

## Aggregation and interpretation

*report to steering committee  
4x a year  
policy adjustments*

*feedback to farmers and practitioners  
management & therapy*