Monitoring trends in the pattern and frequency of disease

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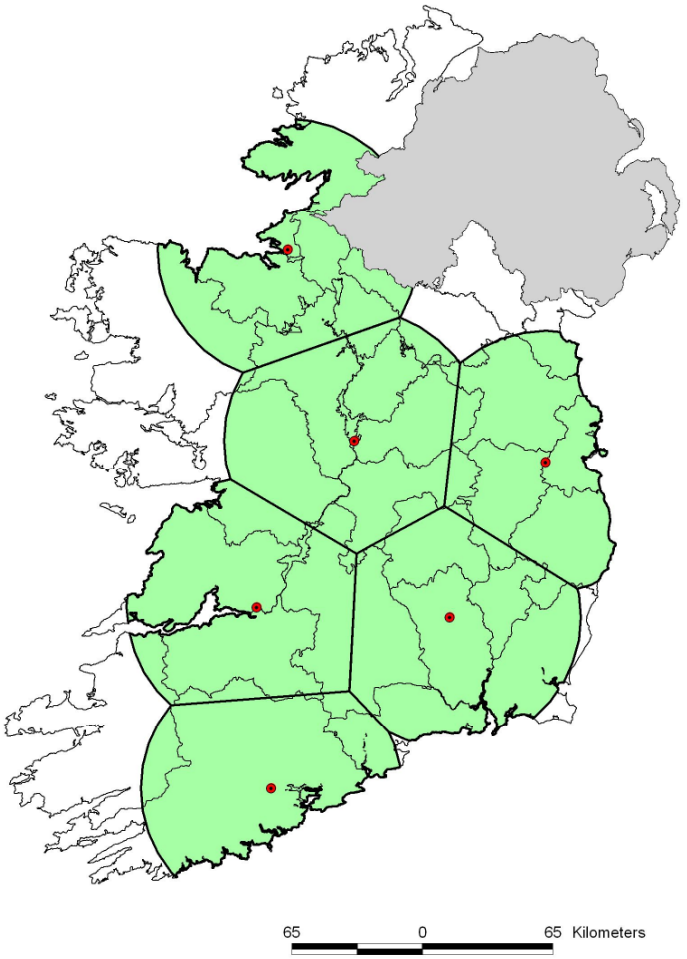
DAFM Regional Veterinary Laboratory Network



Veterinary Laboratory Diagnostic Investigation

POST MORTEM EXAMINATION

- 3517 bovine foetuses
- 1366 neonatal calves (≤ 1 month-old)
- 786 calves (1-5months-old)
- 391 weanlings (6-12 months)
- 618 older cattle (≥12 months)

CLINICAL PATHOLOGY

- blood, faeces, milk, etc. collected from live animals

ALL voluntary submissions (on referral by the veterinary practitioners attending the herds in question)

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Diagnostic caseload → Disease Surveillance

Monitor the pattern and frequency of recognised diseases in different age groups of cattle

→ **Inform husbandry practices and veterinary medicine**

New and emerging diseases

- **Early recognition e.g. Schmallenberg virus infection, "Bleeding calf" syndrome, rumen fluke infestation**

OIE-listed diseases which impact on trade

- **Substantiate IE disease free status and provide early warning of occurrence (e.g. Brucellosis; BSE; FMD)**

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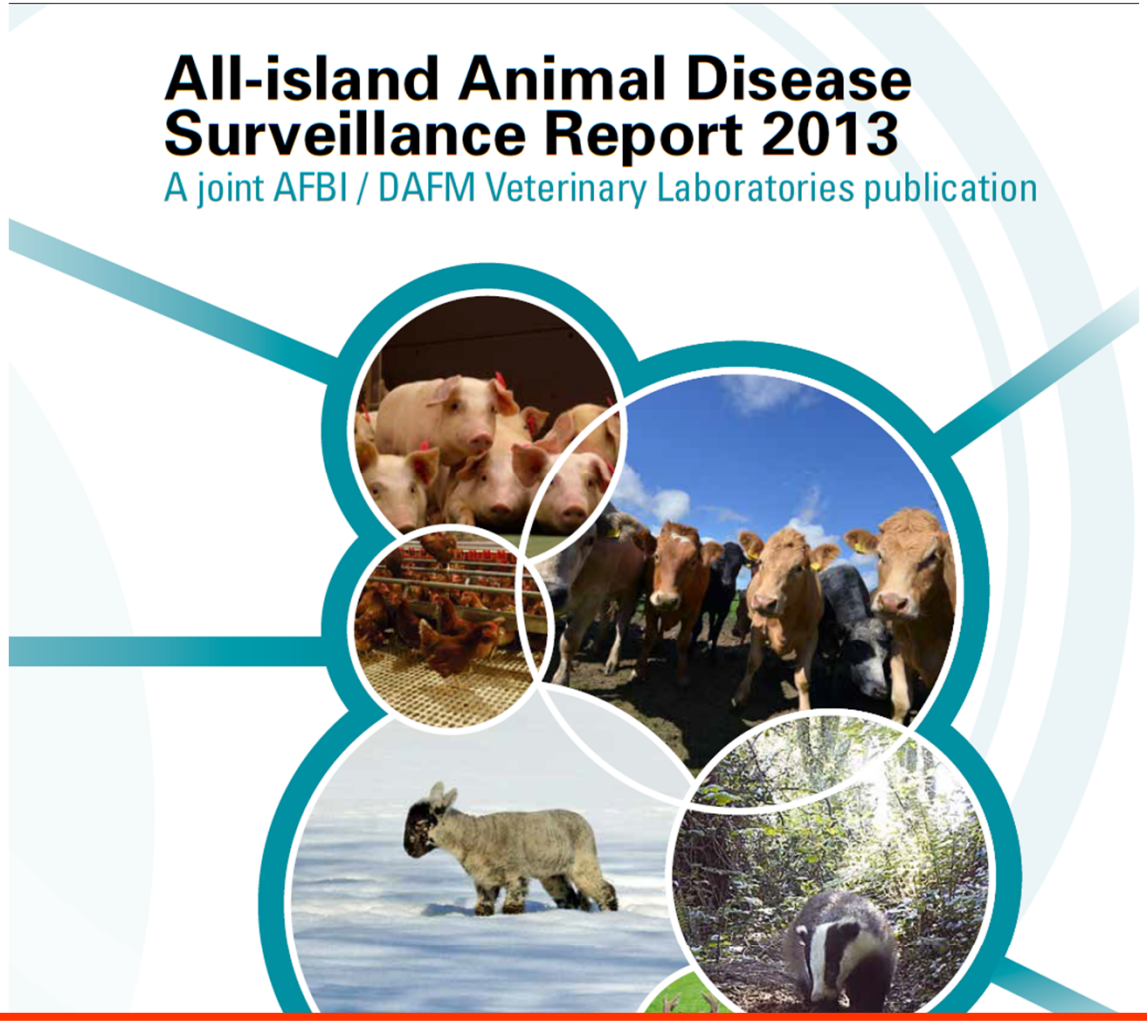
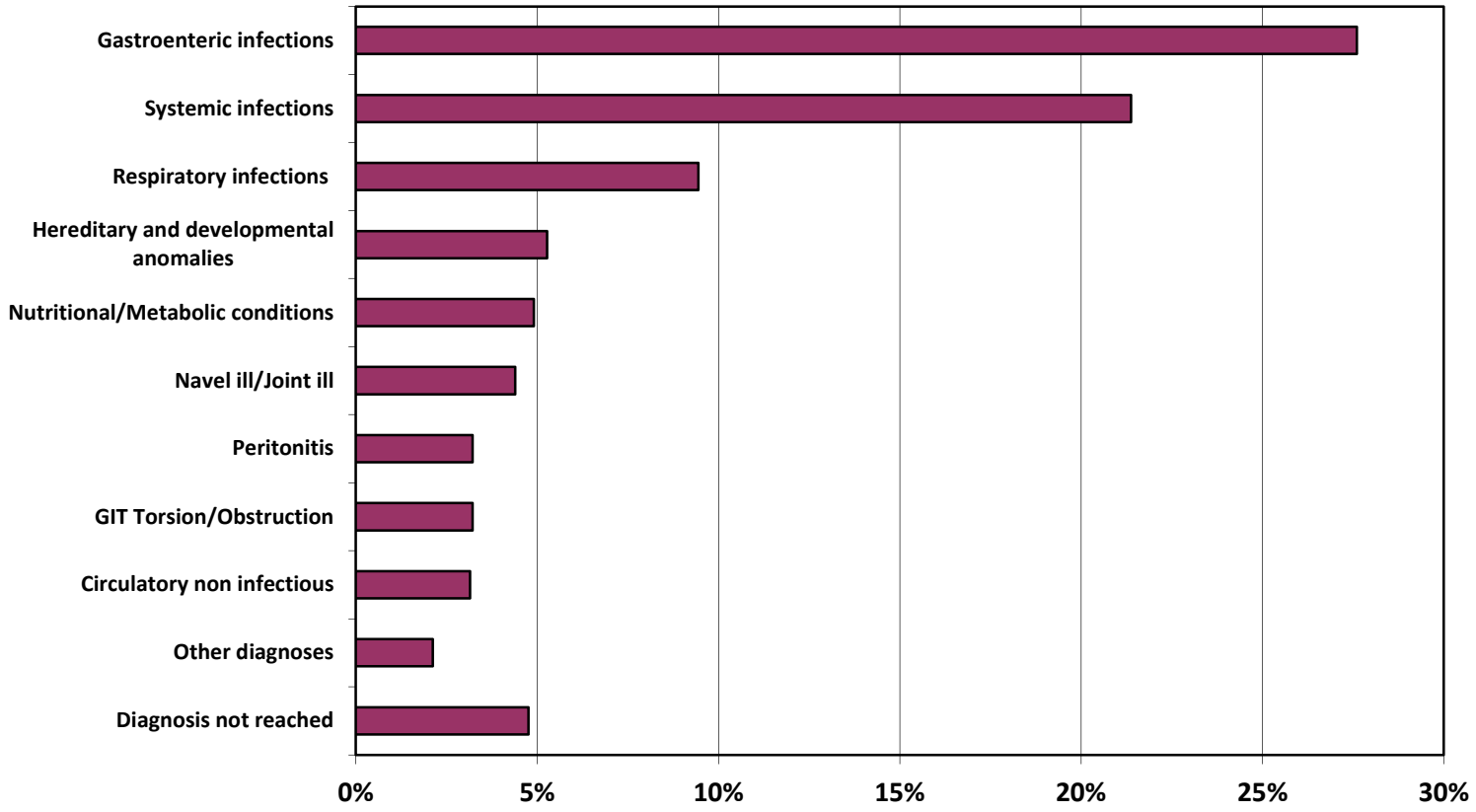


MONITORING TRENDS…..

- **All-island Animal Disease Surveillance Report (annual)**

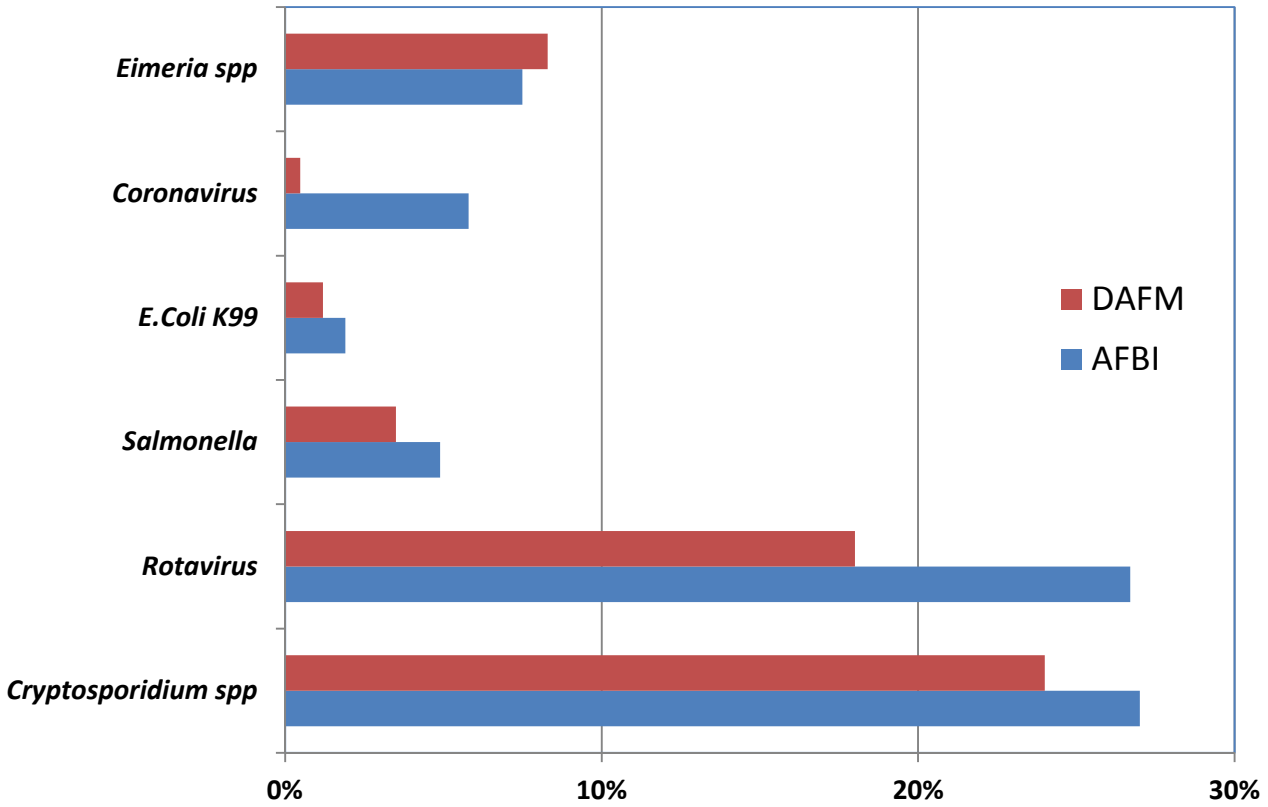
www.agriculture.gov.ie/rvlreport

- **Periodic reports in farming/vet press**



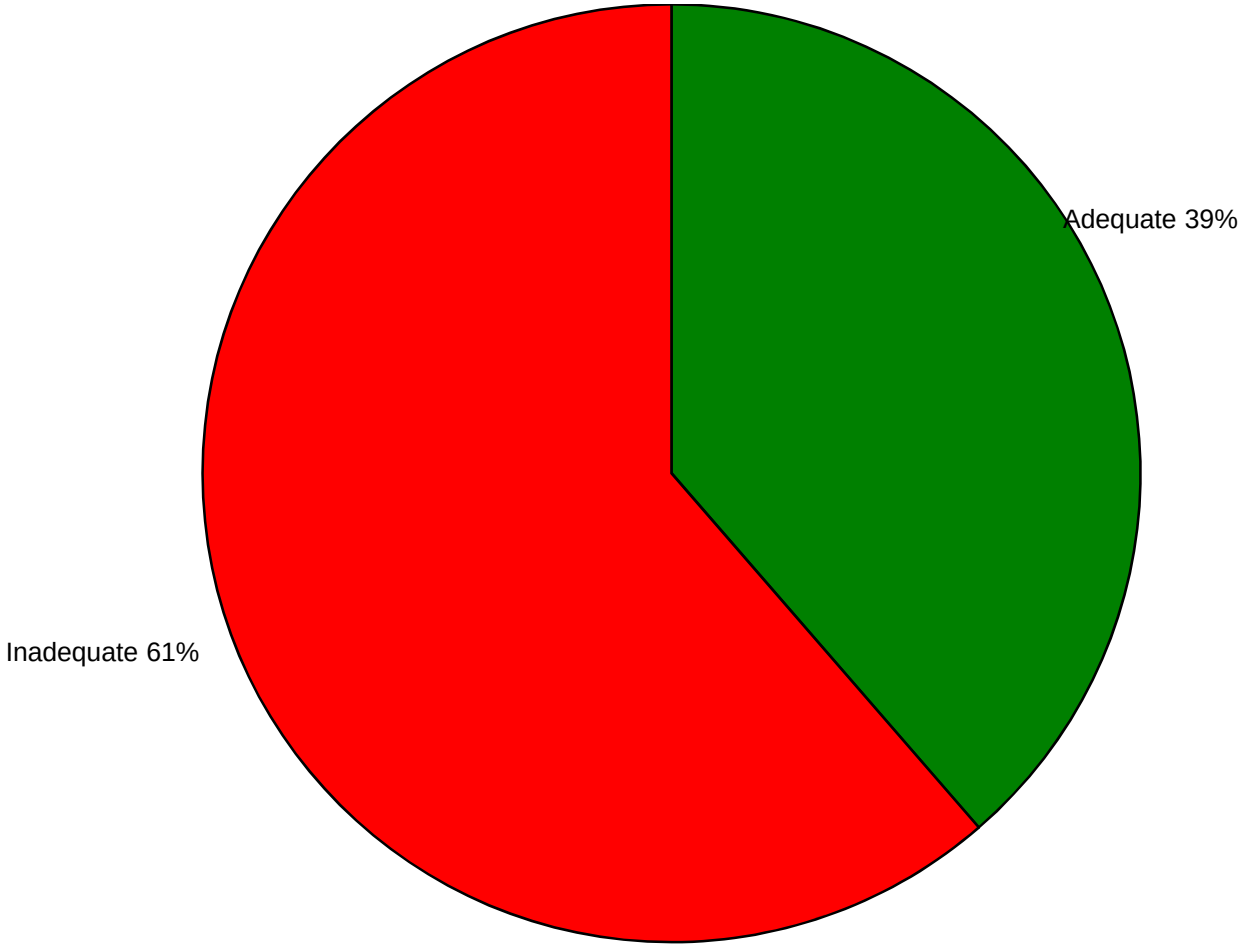
Neonatal calves (≤ 1 month old; n = 1366)

Gastrointestinal infection associated with diarrhoea is the predominant cause of mortality in this age group



Gastrointestinal infection in neonatal calves

The relative frequency of enteropathogenic agents identified in post mortem submissions



Colostral immunity in neonatal calves – ZST

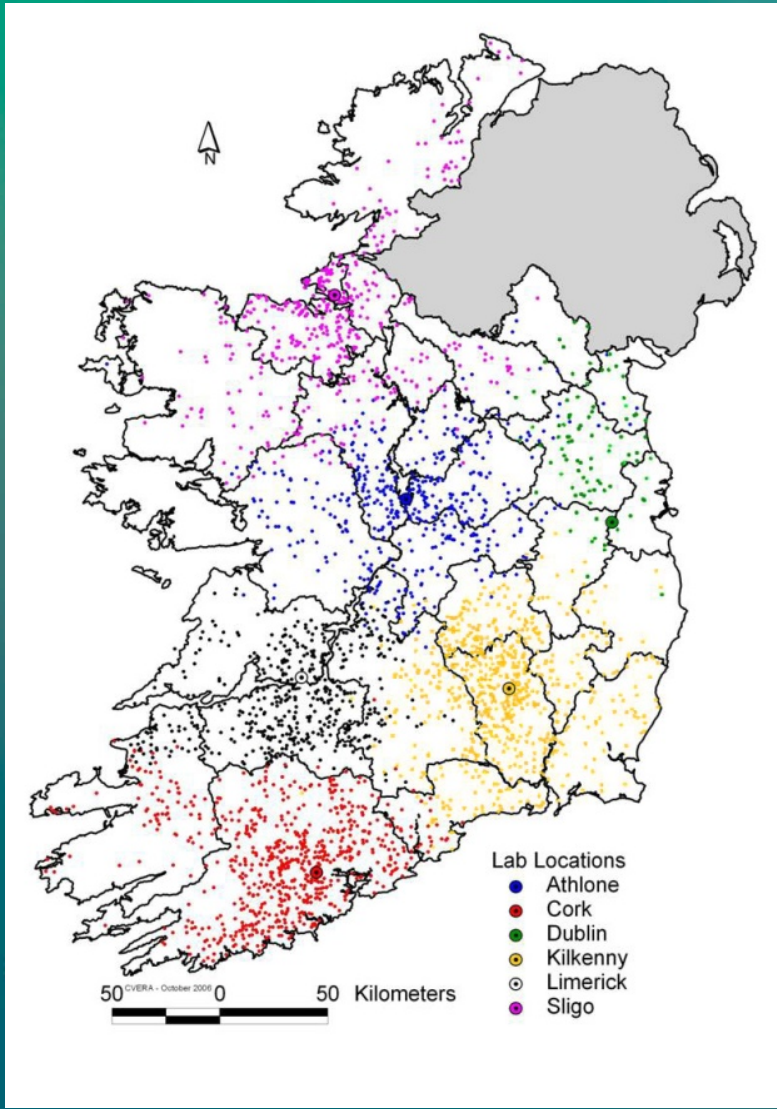
Inadequate in 61% of post mortem submissions

Abortifacients	Positive samples	Percentage of total samples	
Agent/year	**2013**	**2013**	**2012**
Trueperella pyogenes	208	5.9%	6.8%
***Salmonella* Dublin**	205	5.8%	4.0%
Bacillus licheniformis	165	4.7%	4.6%
Listeria moncytogenes	61	1.7%	2.1%
***Aspergillus* spp.**	28	0.8%	0.9%

Agent	DAFM	AFBI
Neospora caninum	82 (4.2%)	42 (8.0%)
Leptospira Hardjo	122 (7.4%)	28 (5.3%)

Bovine abortion – infectious causes; n = 3517 foetuses
Diagnostic rate is low – sporadic abortions v “storms”
Substantiate freedom from brucellosis

Scanning (“Passive”) Surveillance

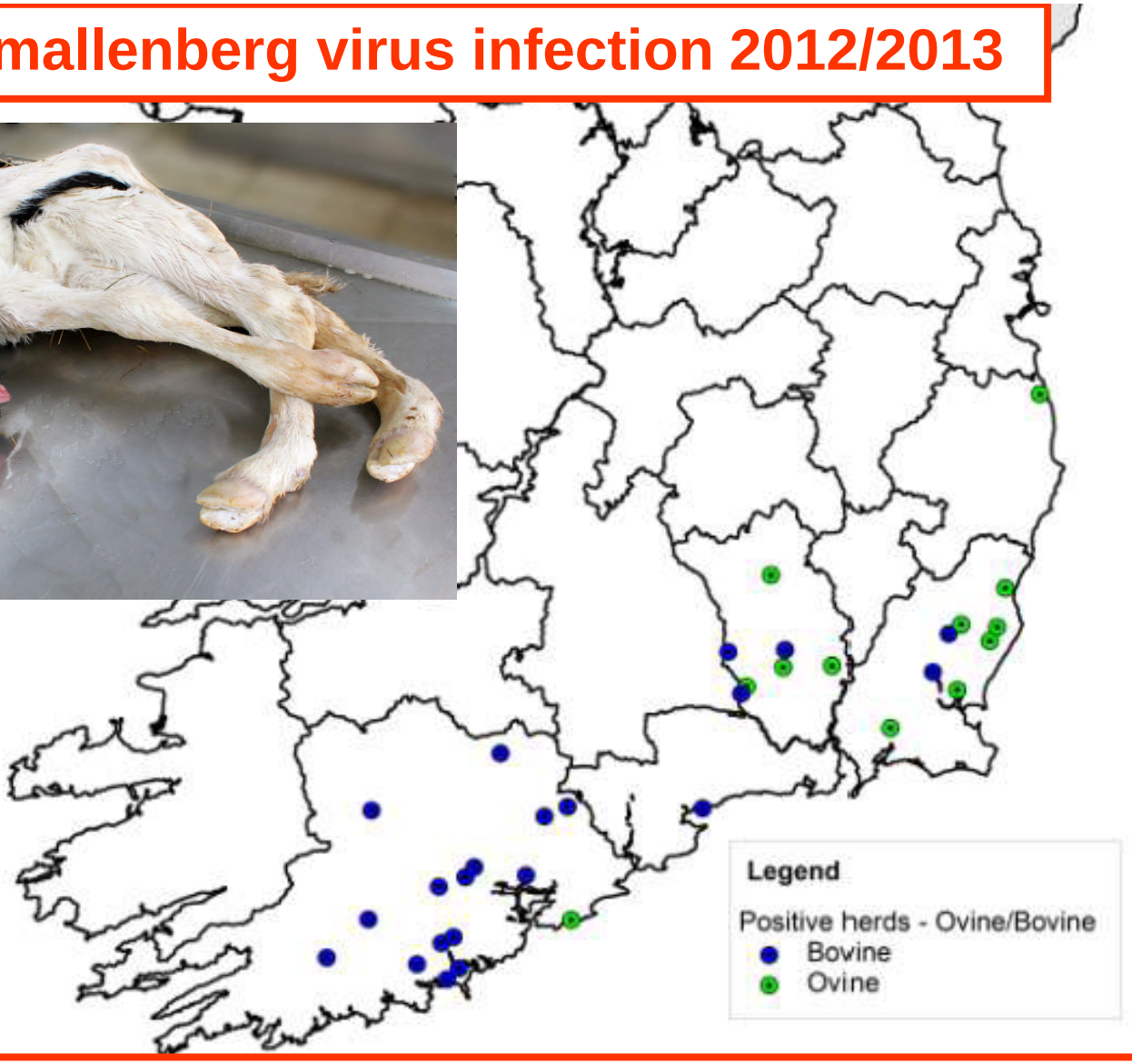


- Voluntary submissions
- Sampling bias
- Caseload does not feature some diseases

⇒ Dataset is not perfect

⇒ Targeted (“Active”) Surveillance to answer specific questions

Schmallenberg virus infection 2012/2013

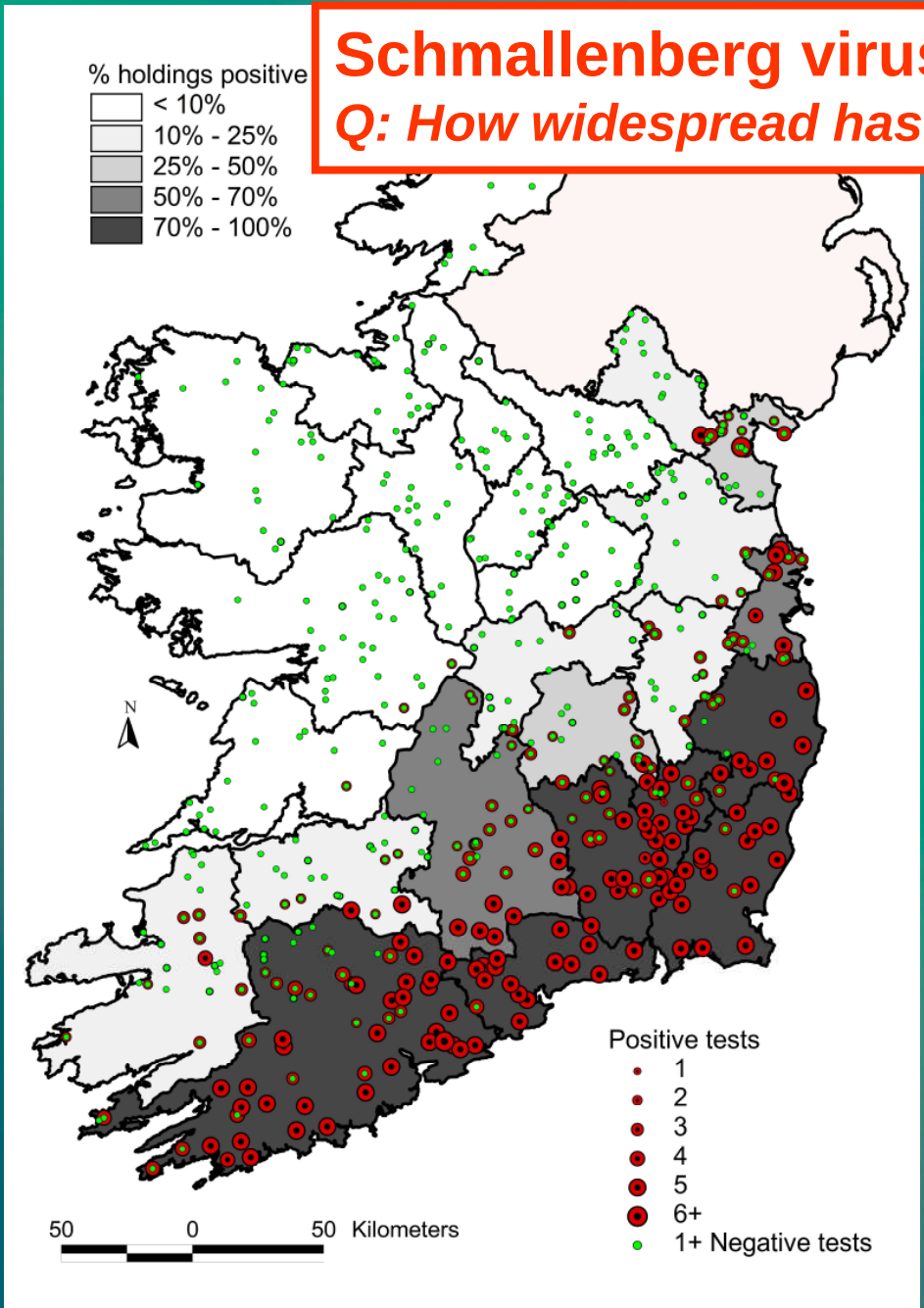


- Info in farming press - submission of malformed foetuses
- PCR testing of brain for virus commenced Jan 2012
- 1st case (end Oct 2012, Cork)

Map courtesy of the Centre for Veterinary Epidemiology and Risk Analysis, University College Dublin

Schmallenberg virus infection 2012/2013

Q: How widespread has exposure to the virus been?



3 national serological surveys

End 2012, mid 2013, end 2013

Brucellosis bloods → SBV test

17 herds/county; 6 animals/herd

Exposure to SBV in South/East

Little or no evidence of further spread of SBV during 2013

How else might we improve disease surveillance?

"Milk drop" in the Netherlands in 2011 associated with SBV

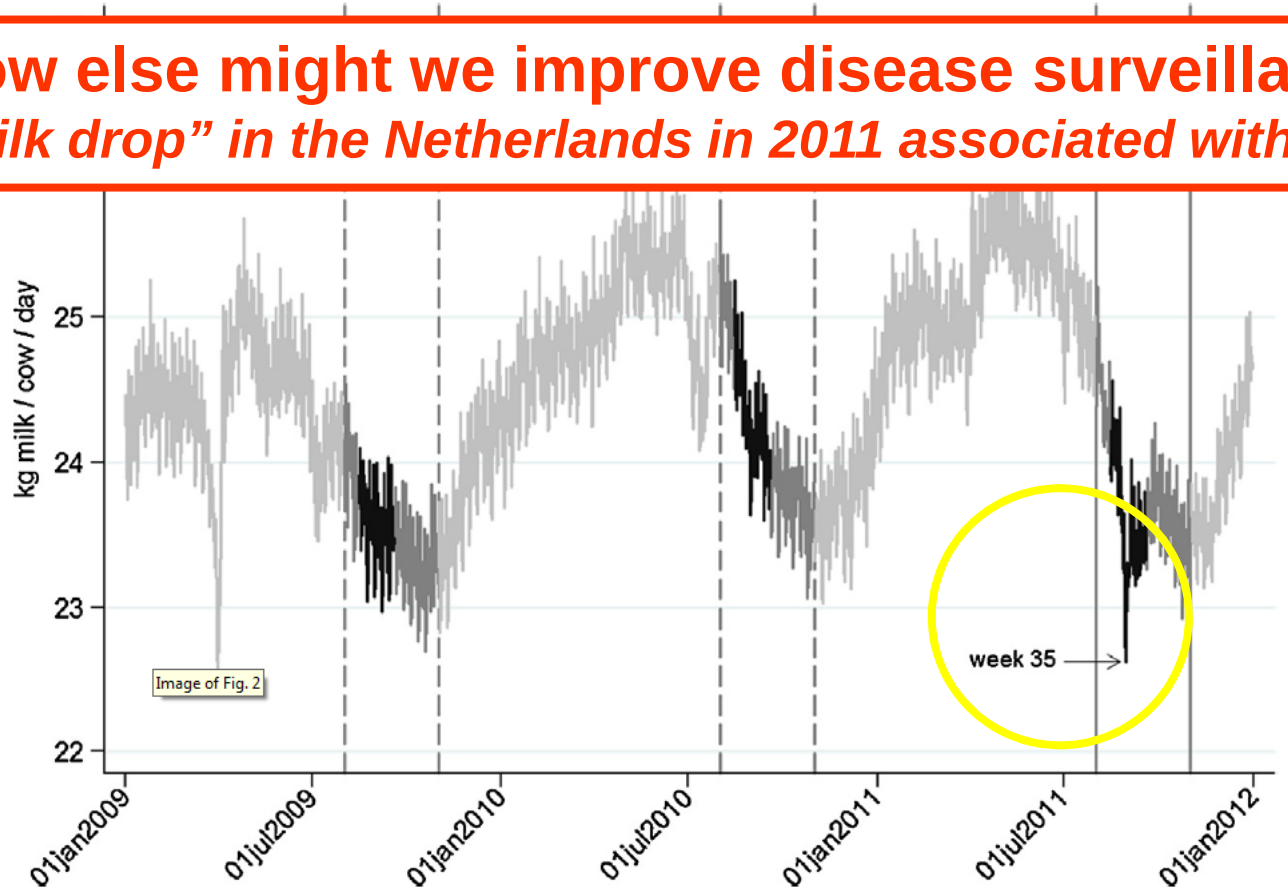


Fig. 2. Average daily milk production (kg) per lactating cow from ~96% of the Dutch dairy herds (between January 1st, 2009 and January 1st, 2012). The hypothesized period in which SBV had an influence on milk production in 2011 is marked between solid vertical lines. The corresponding reference period in 2009 and 2010 is marked between dashed vertical lines. Milk production between August 1st and November 1st (definition 1) is displayed in dark grey. Milk production between August 15th and September 19th (definition 2) is displayed in black.

Please cite

- **Damien Barrett PhD Studies (DAFM Labs/CVERA)**
- **Bulk milk data for 450 herds in SE for 2012 and 2013**
- **data analysis → develop a model for early warning in future**

How else might we improve disease surveillance?

- Capture data at farm level
- Pilot project involving 10 veterinary practices
- App on smart phone to record clinical info
- Linked to practice software
- Data aggregation and analysis

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Acknowledgements

- DAFM & AFBI Laboratory staff

- Mícheál Casey
- JoseMaria Lozano
- Damien Barrett

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