Progress and Potential
Background of the EuFMDiS project
EuFMD workplan 2015-2019

Components

1.1 – Training for Member States

1.2 – Improved Contingency Planning

1.3 - Improved surveillance and management in Thrace

1.4 - improve emergency management capacity for FMD in the Balkan region

1.5 - FAR - Fund for Applied Research

1.6 - Emergency technical responses

1.7 - Proficiency test scheme

1.8 - Risk Analysis and Communication
Background

• 2014, 2016 Frascati, Italy – EuFMD Modeling Workshops
  Australian Animal Disease Spread (AADIS) model is used as a training tool

• 2016, Budapest, Hungary - Central European CVO meeting
  Initiative from Austria on Cross Border Disease Spread Modelling (CroBoDiMo) between Central European countries

• 2017, Rome, Italy – Funds for Applied Research (FAR)
  EuFMD funds pilot project for a European multi country FMD modeling initiative.
Background

- 2017, Dublin, Ireland – EuFMD 94th Executive Committee meeting
  European multi-country FMD spread model pilot is endorsed
- 2017, Vienna, Austria – 1st Workshop on EuFMDiS, with 6 pilot countries
- 2018, Data gathering and close collaboration with 7 pilot countries:
  IT, AT, SI, HR, HU, RO, BG
- 2018, Budapest, Hungary – 2nd Workshop on EuFMDiS
  Model demonstration and training for pilot countries + FYROM and IE
Key components of the EuFMDiS model
Overview

EuFMDiS is based on the conceptual hybrid modelling approach developed for the Australian Animal Disease (AADIS) model.

- Developed with funding by the Australian Government
- Sophisticated disease modelling platform and decision-support tool for FMD
- Used in EuFMD disease modelling training workshops (in 2014 and 2016)
- Potential to be used in Europe identified

A formalised collaboration between EuFMD and the Australian Department of Agriculture and Water Resources has provided royalty-free access to the AADIS software and intellectual property.
Data and Parameters

• **Regions**
To capture differences in livestock production patterns within a country

• **Herds and herd types**
The herd is the epidemiological unit in EuFMDiS. Common herd classification that can be applied across countries: nine herd types defined for central Europe

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Herd type</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>bov</td>
<td>Large commercial dairy herd</td>
<td>Specialist milk producer. Cattle are kept to primarily produce and sell milk</td>
</tr>
<tr>
<td>2</td>
<td>bov</td>
<td>Large commercial beef herd</td>
<td>Specialist beef production. Cattle are kept to primarily produce and sell meat</td>
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<tr>
<td>3</td>
<td>bov</td>
<td>Small commercial cattle herd</td>
<td>Cattle are kept, usually in smaller herd sizes, to primarily produce and sell meat and/or milk on a smaller, local scale</td>
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<tr>
<td>4</td>
<td>buf</td>
<td>Commercial buffalo</td>
<td>Buffalo kept for milk or meat production</td>
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<td>5</td>
<td>ovi/cap</td>
<td>Commercial small ruminants</td>
<td>Small ruminants are kept to primarily produce and sell meat/milk/wool commercially</td>
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<td>6</td>
<td>sui</td>
<td>Large-scale commercial fattening pig herd</td>
<td>Pigs are kept under intensive production system to be grown and sold for slaughter, for pig meat production</td>
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<tr>
<td>7</td>
<td>sui</td>
<td>Large scale commercial breeding pig herd</td>
<td>Pigs are kept under intensive production system for producing replacement pigs to be sold to other holdings (e.g. fattening farms)</td>
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<tr>
<td>8</td>
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<td>Small-scale commercial pig</td>
<td>Pigs are kept primarily to produce and sell meat on a smaller, local scale. Generally lower biosecurity than intensive systems</td>
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<tr>
<td>9</td>
<td>mixed</td>
<td>Backyard herd</td>
<td>Small number of animals (cattle, buffalo, sheep, goat, pig) kept primarily for own consumption (non-commercial).</td>
</tr>
</tbody>
</table>
Disease transmission

Within-country spread

• Detailed transmission pathways with jump-diffusion
  • Direct and indirect contacts
  • Airborne spread and Local spread
  • Assembly centres spread

Between country spread

• Using animal movement data (TRACES)
• Regional scale
• Airborne spread and local (proximity) spread

Data needs

• Information on ’contact’ behavior of different herd types
• Additional: assembly centres, weather data
Control measures

• The measures in EuFMDiS are consistent with the approaches described in European FMD Directive (2003)

• Flexible and highly configurable

• Individual measures can be switched on and off

• Success of control measures depend on:
  • Effectiveness of measures
  • Resources for control
Control measures

• **First IH detection**
  o Fixed (or passive)

• **Movement restrictions**
  o National livestock standstills
  o Local restrictions (Protection Zone and Surveillance Zone)

• **Surveillance**
  o Surveillance visits, priorities, scheduling, periods

• **Tracing**
  o Trace forwards, trace back, tracing effectiveness

• **Suspect premises reporting**
  o True and false positive reporting

• **Infected Premises operations**
  o Destruction, disposal decontamination

• **Pre-emptive culling**
  o Dangerous contacts, ring culling, suspect premises culling

• **Vaccination**
  o Suppressive, protective, mass vaccination
  o Priorities
  o High risk areas

• **Post-outbreak management**
  o Disease surveillance
  o Managing vaccinated animals
Reporting costs and economic impacts

• Useful to provide economic outputs from the modelling, as understanding the economic impacts and being able to compare costs of different control strategies is very important to decision-makers.

• Keeping it simple. Model will track:
  o Animal values (for compensation)
  o Cost of managing outbreak including operational activities (surveillance, culling, vaccination, running disease control centres, etc.)
  o Trade losses
  o Post-outbreak management costs (surveillance, vaccinated animals)

• Relative versus absolute costs/impacts

• Adequate for comparing policies
Model Display
# Model Reporting

![Excel spreadsheet](image)

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Participants have indicated the potential applications of the model

- For training purposes: raising awareness among veterinarians, stakeholders - easy tool for visualization;

- Resources planning: how many teams for culling, surveillance, etc.

- Estimation of costs - total costs, Trade loss, compensation costs;

- Support for decision making: in long term - support for decision making (vaccination Y/N, when to do it, preventive culling, comparing the costs, etc.)

- Defining high risk areas based on the outputs of the model;

- Carry out risk assessments, for example if there is an outbreak of FMD in other MS;
EuFMDiS Future Development Plans

1.2.1.5 European, multi-country animal disease spread model

1. Retrieve outstanding data from participating countries
2. Software development and model finalisation
   • Version 1.3: Incorporation of more data
   • Version 1.4: More flexibility in operational activities
   • Version 1.5: More country specific vaccination options
3. Independent model testing and validation
4. Establish collaboration with EFSA SIGMA initiative
5. Establish EUFMDis Steering Group
6. Incorporate wild life component into the EuFMDiS model
7. Incorporate additional countries into the modelling project: Spain-Portugal, Benelux, Nordic-Baltic Veterinary Contingency Group
8. Ongoing support for the central European modelling initiative
9. Demo model to OIE, DG SANTE, COPA-COGECA, UECBV, Health for Animals, ...
EuFMDiS Future Development Plans

1.2.1.1 Contingency planning network

=> Use EuFMDis to test contingency plans

1.2.1.2 Modelling network

=> Demonstrate EuFMDis

1.2.1.3 Emergency Vaccination network

=> Use EuFMDis to test emergency vaccination strategies
EuFMDiS Future Development Plans

1.2.2.1 Economic impact calculator

=> EuFMDis calculates economic costs and losses

1.2.2.2 Support to development of diagnostic banks

1.2.2.3 Support to emergency access to vaccine banks

1.2.2.4 Support to sharing critical human resources

=> EuFMDis can provide requirements assessments

1.2.2.5 Other decision support tools

> EuFMDis is a decision support tool

⇒ European Transnational Contingency Planning workshop before July 2019
European Transnational Contingency Planning workshop

Objectives:
• Investigate biosecurity criteria that guarantee safe trade during outbreaks

Organising Committee:
• Eu FMD standing committee
• DG Santé
• EFSA
• COPA-COGECA
• UECBV

Format:
• Evaluate biosecurity scenarios with EUFMDis model

Participants:
• PPP

Dates and Venue
• 2019 Q2, venue: Romania?

Budget:
Private sector engagement in emergency preparedness
Public vs. Private Engagement

• FMD control is considered as public good with top-down regulation:
  • International bodies -> National Government -> Veterinary Services -> Livestock Industry
  • Public investments and responsibilities
• Livestock industry faces constrains:
  • Insufficient protection
  • Loss of business
  • Welfare issues
  • Insufficient control measures
• Equal situation in FMD-free as FMD-endemic areas
Public Private Partnership

- Private Engagement in contingency planning and preparedness
  - Preparedness and control in line with current livestock production practices
  - Invest in outbreak control measures
  - Develop industry contingency plans
- Private engagement in biosecurity protocols
  - Prevent disease incursion
  - Protect against wildlife-livestock interaction
  - Guarantee safe trade during outbreaks
Public Private Partnership

1.2.2.6 Private Sector involvement in Emergency Preparedness and management

⇒ Private sector engagement and investment in FMD control

⇒ Needs and expectations assessment

• Private stakeholders consultation
• Public stakeholders consultation
• Consultation to develop resource materials to MSs
• PPP conference
• Open the discussion to other diseases?
Thank you

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