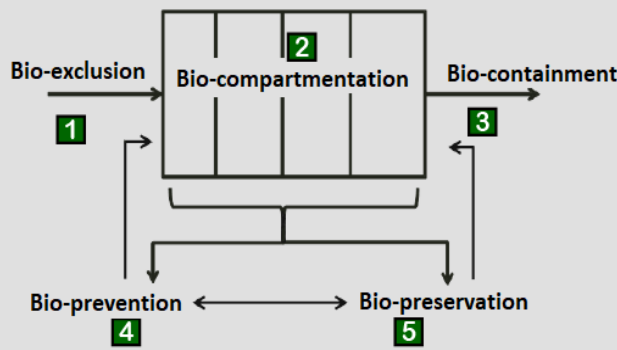


Evolving Cattle Biosecurity in a One Health Perspective



Claude Saegerman*
Véronique Renault
Marie-France Humblet

**DMV, MSc Epid., PhD, Dipl. ECVPH,
Membre de l'Action COST CA20103*

Claude.Saegerman@uliege.be



BETTER



Symposium on Animal Health, Torhout, 19 April 2022



Dr. Véronique Renault, PhD

Current position:

Vétérinaires et Agronomes Sans Frontières (Laos)



Dr. Marie-France Humblet, PhD

Current position:

*Department of Occupational Safety and Health,
University of Liege*

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- **Recommendations**
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Rule of 5T



Trade, **T**ransport, **T**ravel, **T**ourism, **T**errorism

Import of live bovines in BE - 2020

List of supplying markets for a product imported by Belgium in 2020

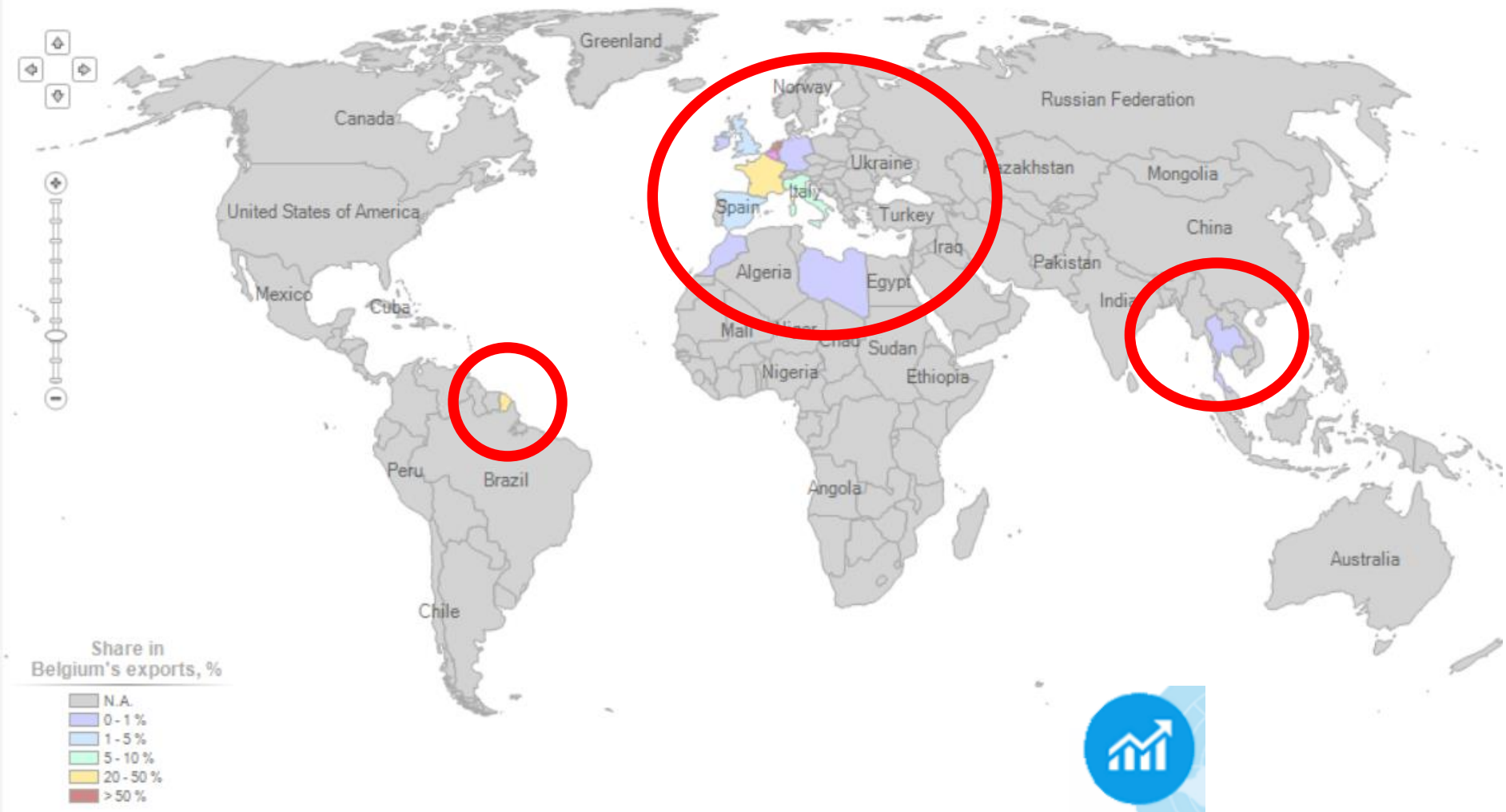
Product : 0102 Live bovine animals



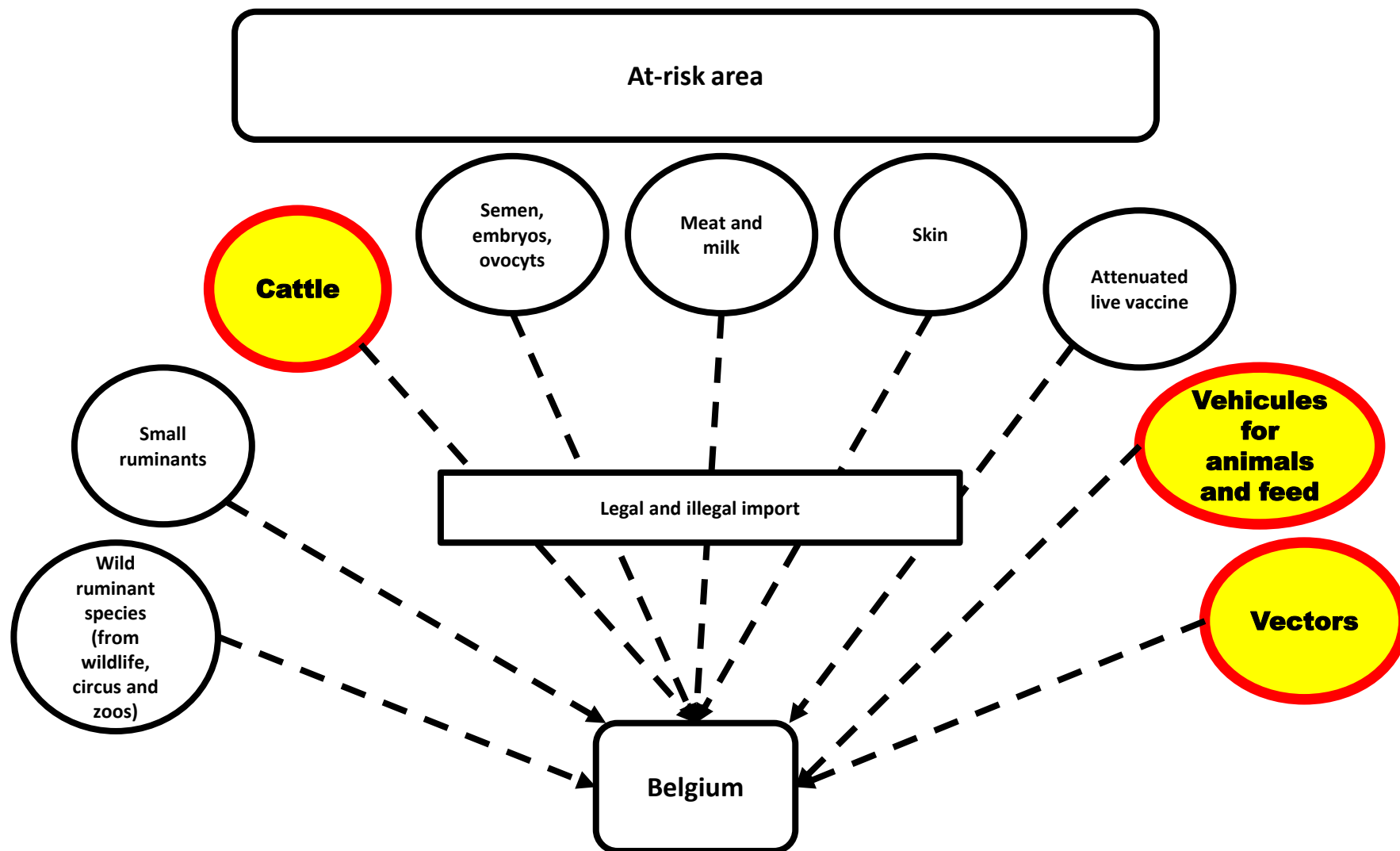
Export of live bovines in BE - 2020

List of importing markets for a product exported by Belgium in 2020

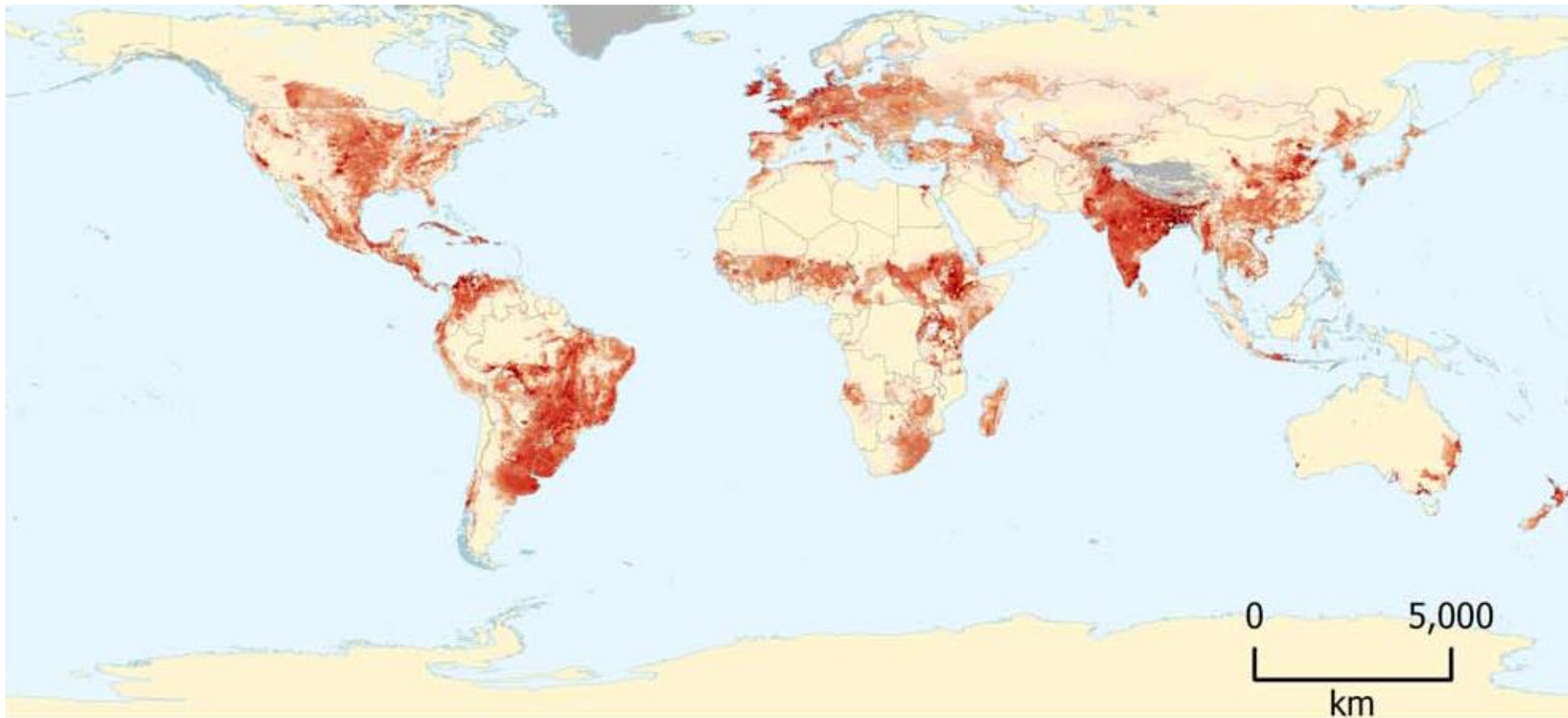
Product : 0102 Live bovine animals



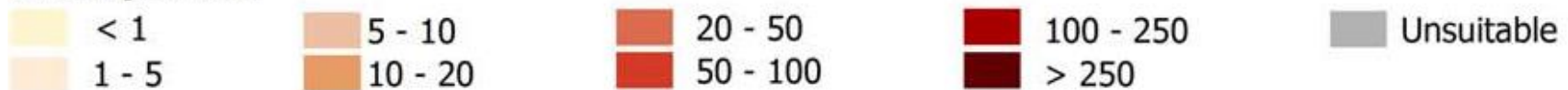
Risk pathway (e.g. Lumpy skin disease)



Cattle density



Head per km²



Occurrences in PubMed

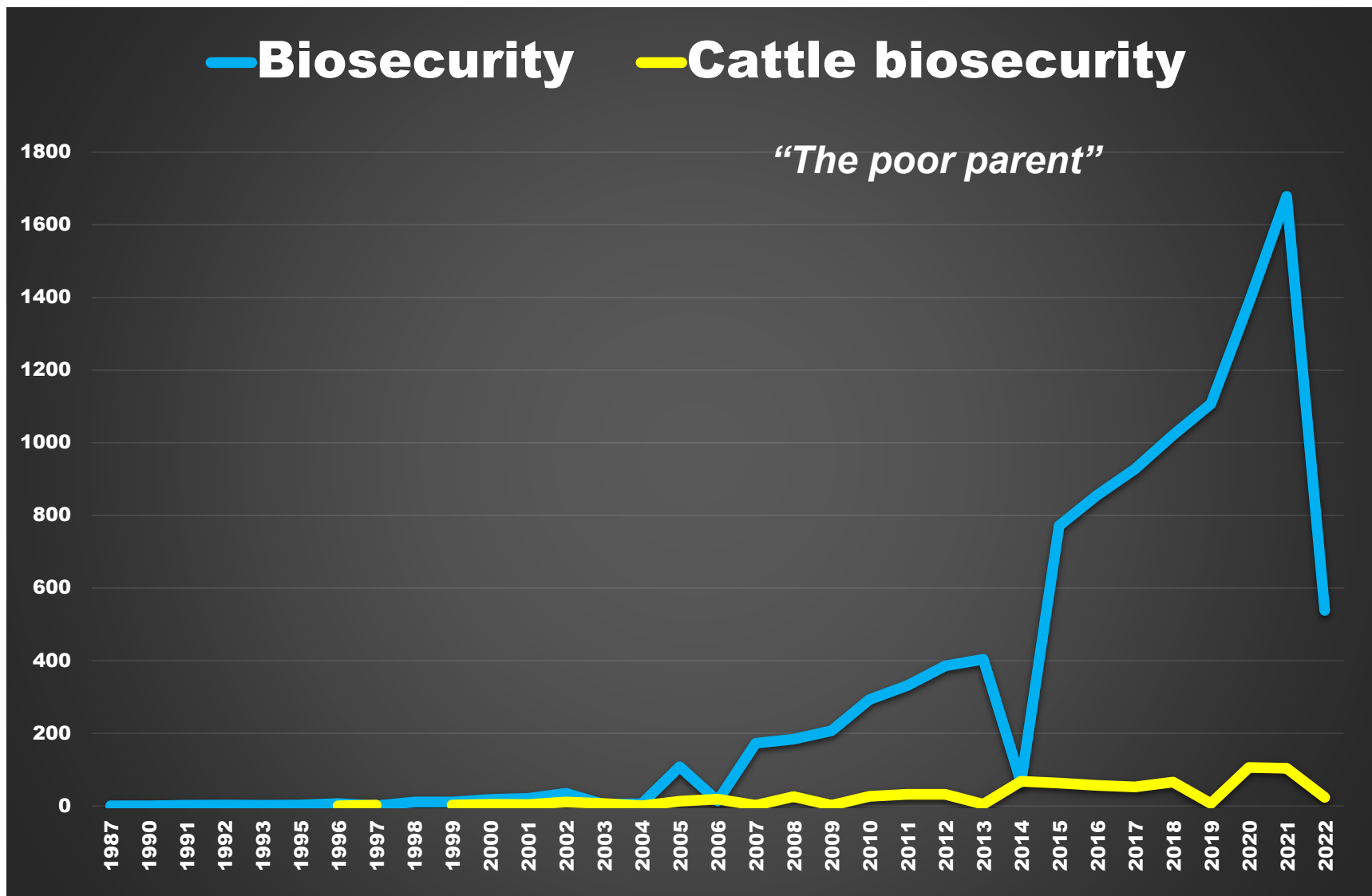


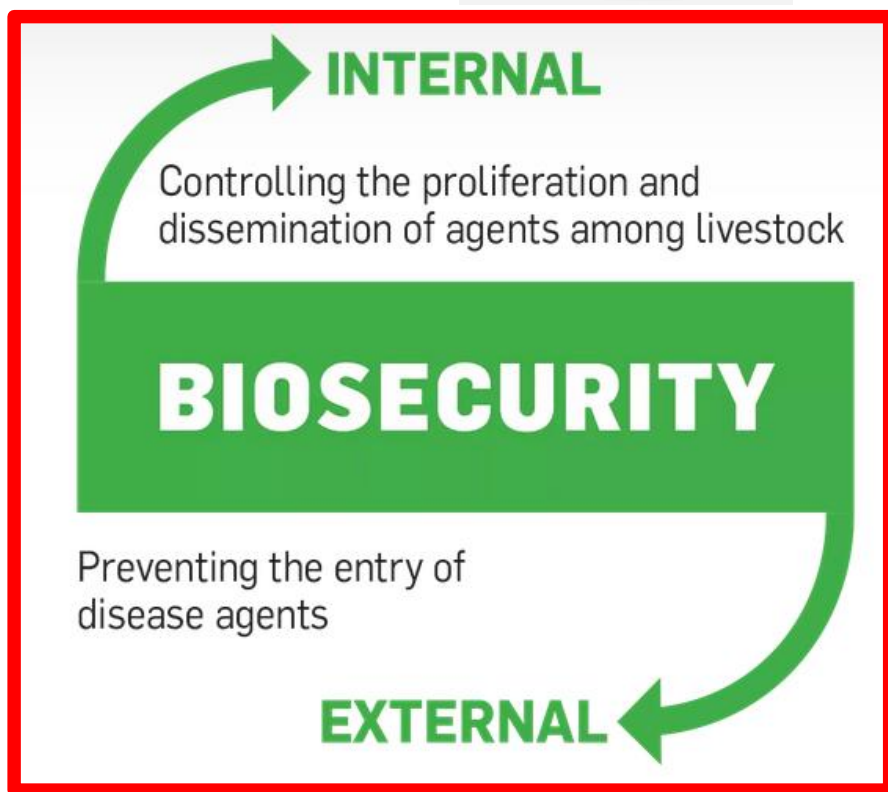
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Old concept



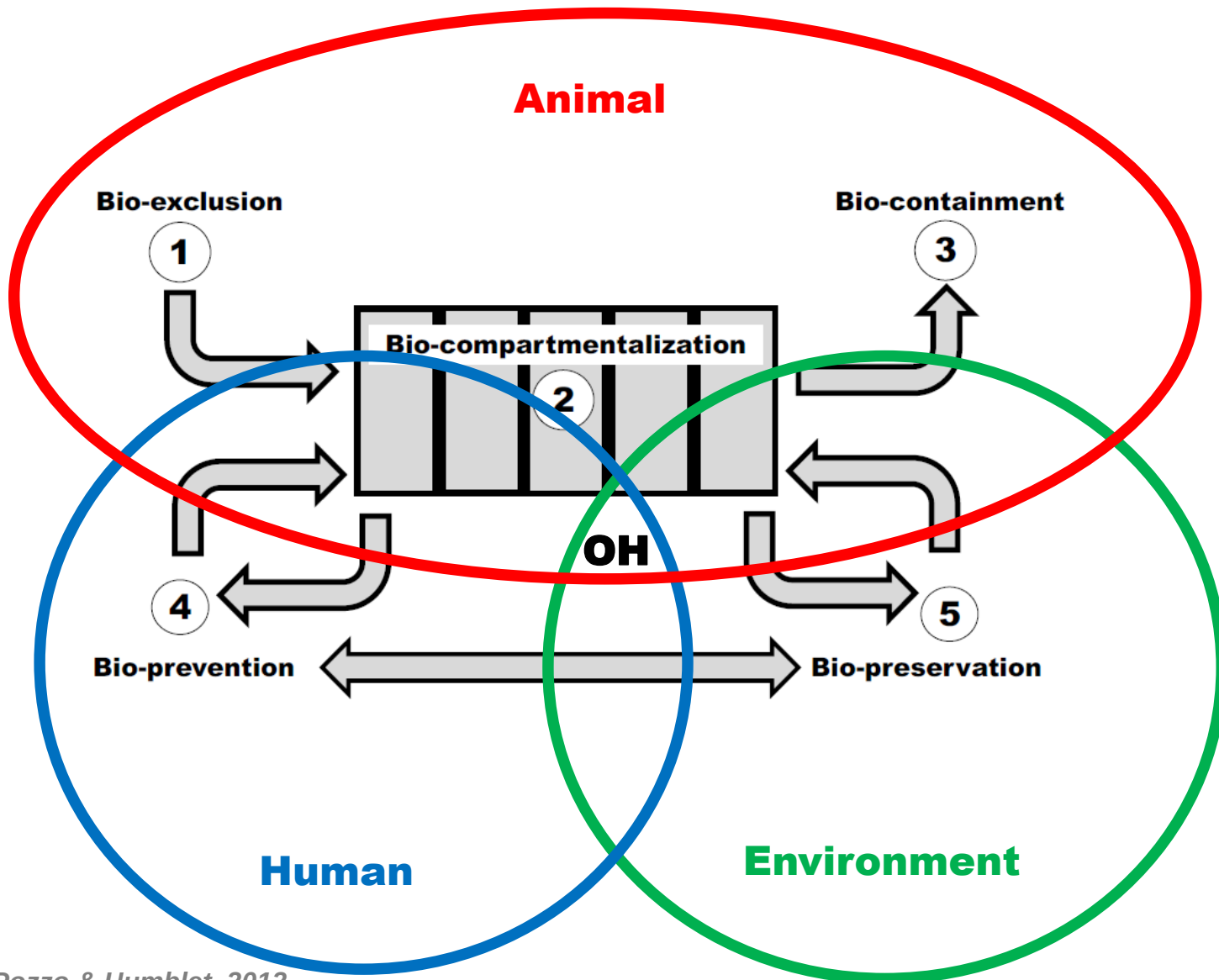
<https://www.biomin.net/>

Biosecurity includes all measures to prevent:

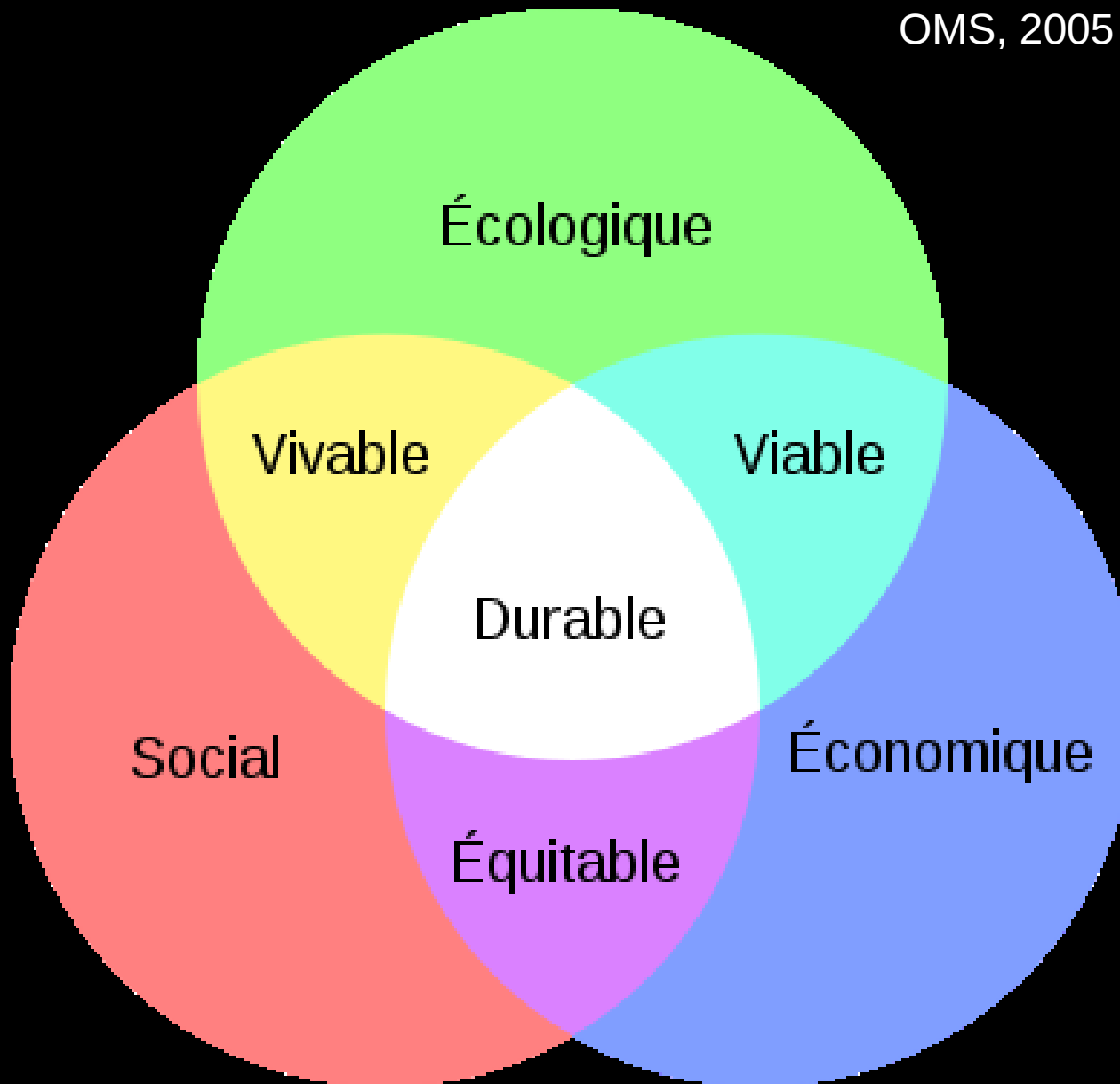
- **the introduction of pathogens (bio-exclusion) and**
- **reduce the spread of pathogens (bio-containment)**

OIE-FAO, 2009

Evolving to the new paradigm: 5B



OMS, 2005



Several definitions

- EU (AHL): “The **sum of management and physical measures** designed to reduce the risk of the introduction, development and spread of diseases to, from and within:
 - (a) an animal population, or
 - (b) an establishment, zone, compartment, means of transport or any other facilities, premises or location”
- FAO-WHO: “A **strategic and integrated concept** that encompasses the policy and regulatory frameworks (including instruments and activities) that analyse and manage risk in food safety, public health, animal life and health, and plant life and health, including associated environmental risk”

• **Please participate to the next online survey on this matter** within the EU-Cost Action BETTER...**very soon** 😊

For more information



animals

<https://www.mdpi.com/2076-2615/12/1/63>



Commentary

Biosecurity Concept: Origins, Evolution and Perspectives

Véronique Renault ¹, Marie-France Humblet ² and Claude Saegerman ^{1,*}

“ Special attention is required to ensure that the definition of biosecurity is comprehensive and not limited to animal or public health ”

Multilevel approach (e.g.)

Vet. Res. (2009) 40:50

DOI: [10.1051/vetres/2009033](https://doi.org/10.1051/vetres/2009033)

www.vetres.org

© INRA, EDP Sciences, 2009

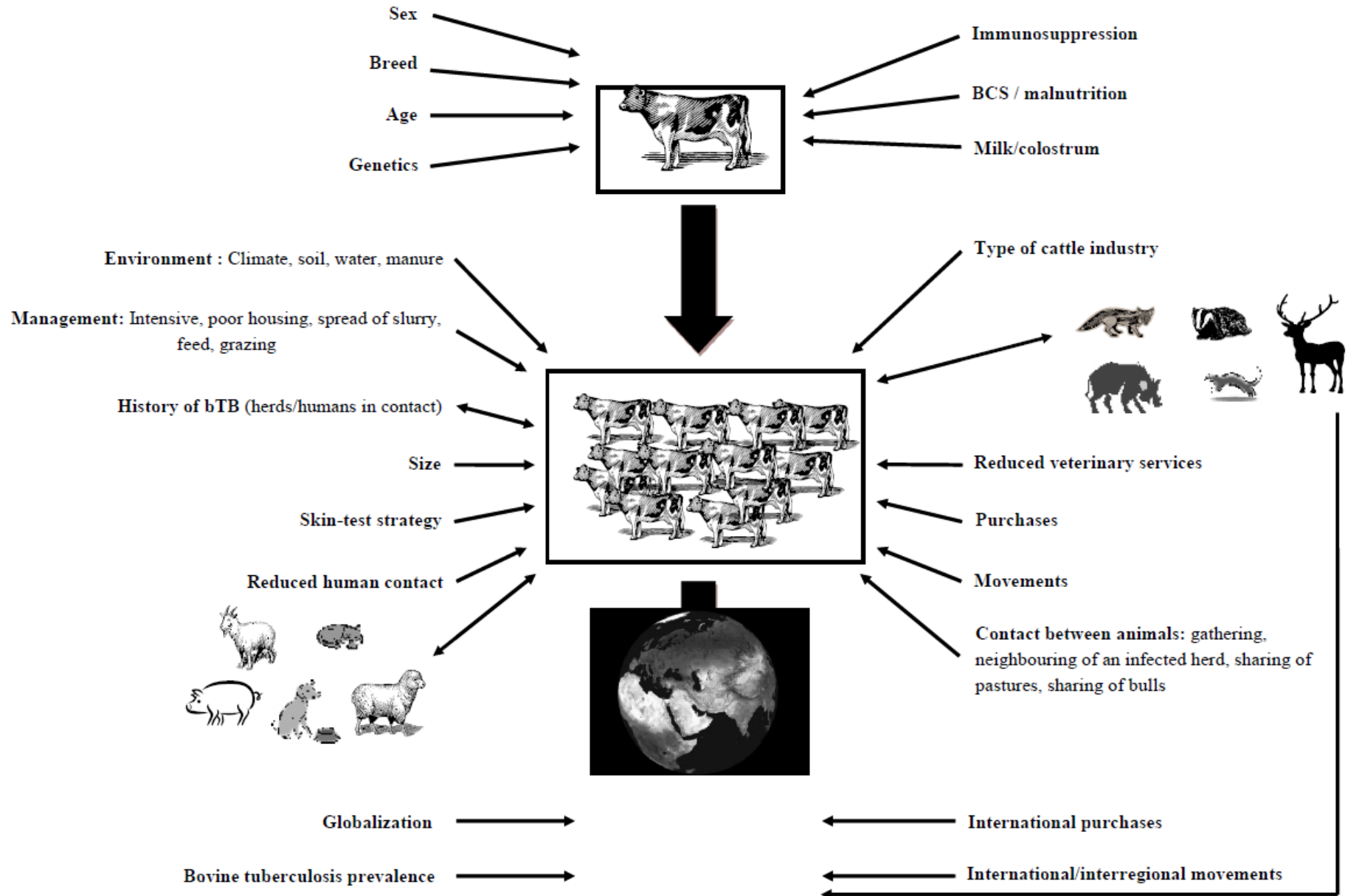
Review article

Classification of worldwide bovine tuberculosis risk factors in cattle: a stratified approach

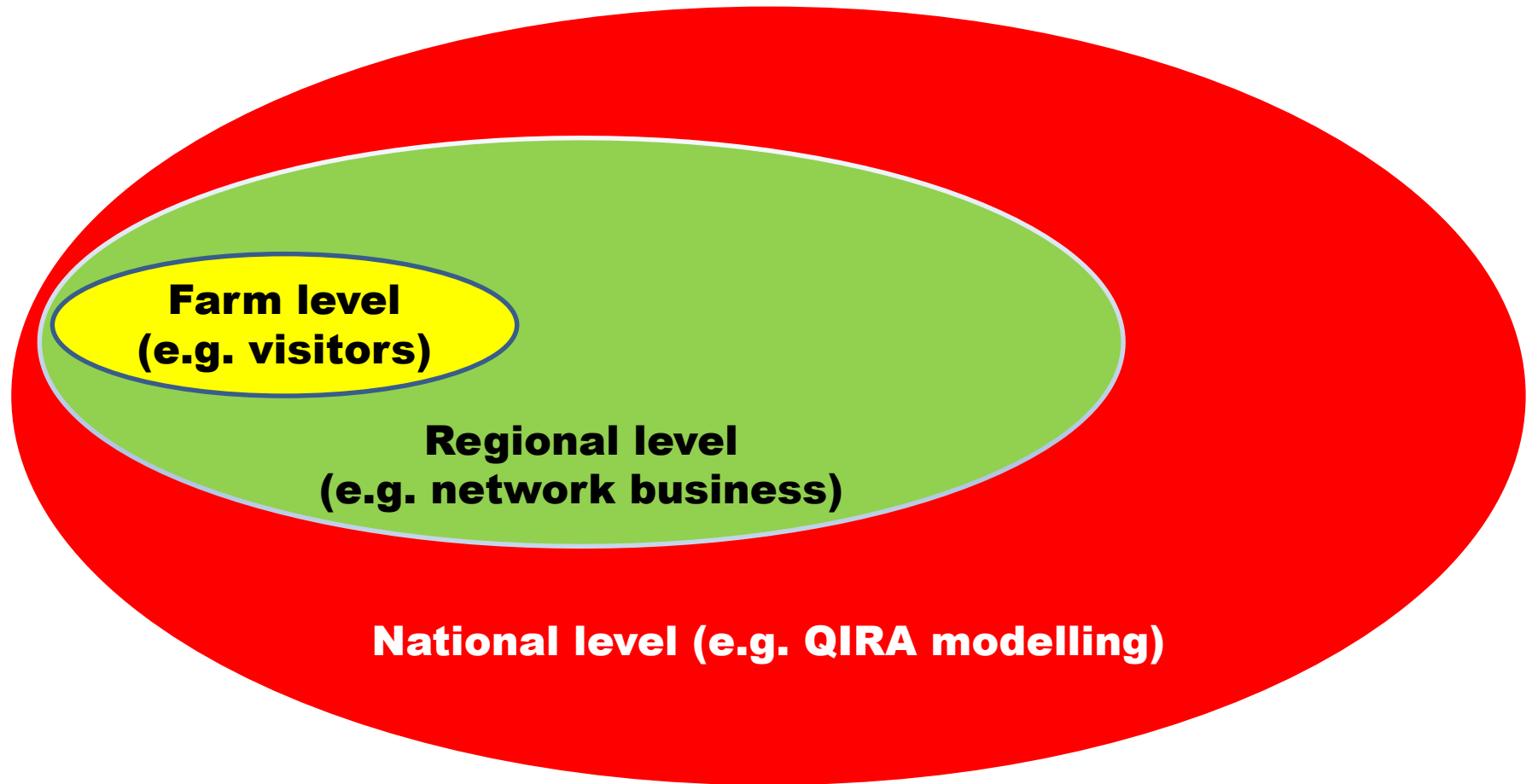
Marie-France HUMBLET¹, Maria Laura BOSCHIROLI², Claude SAEGERMAN^{1*}



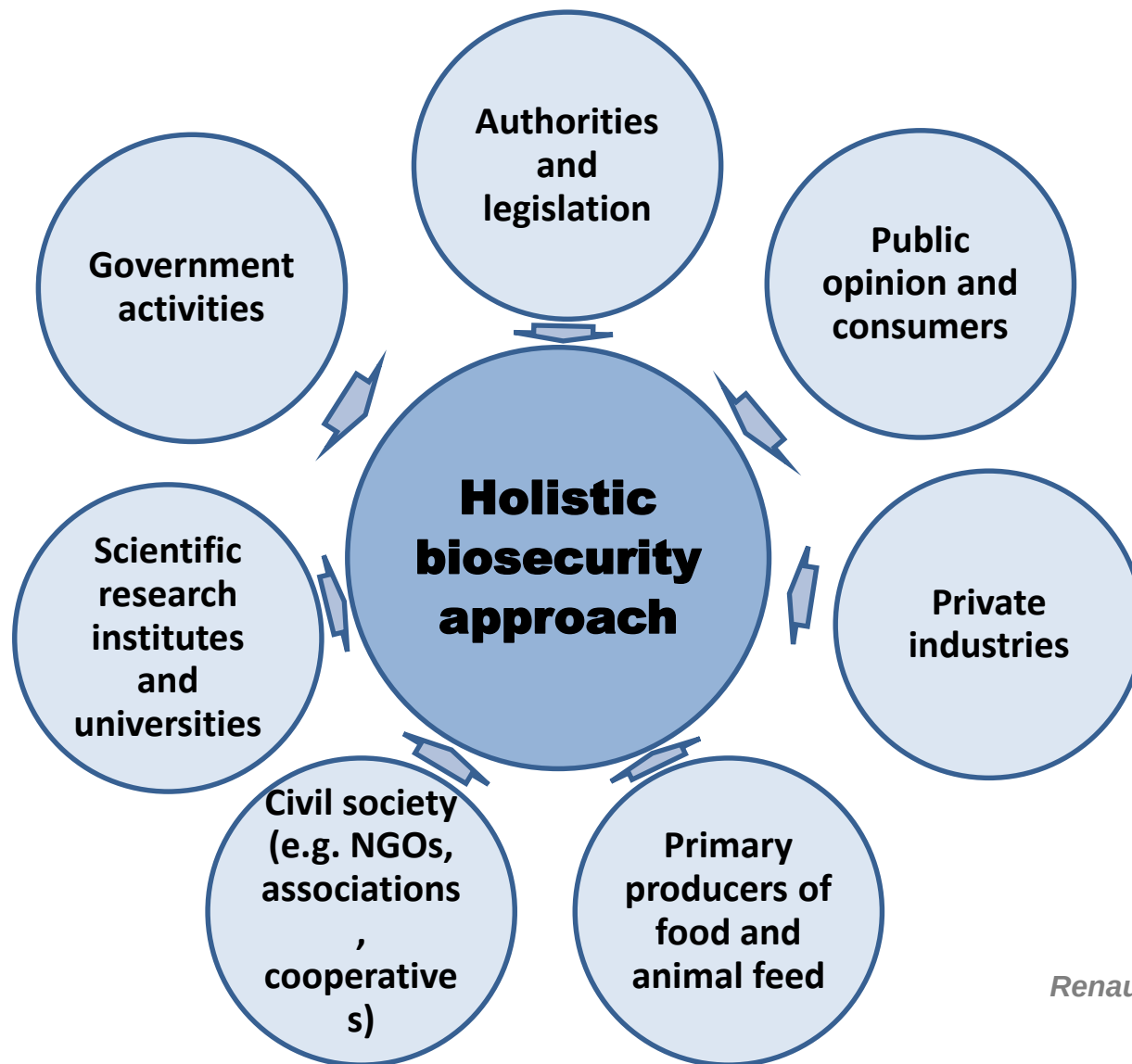
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Multilevel approach



Need for an holistic approach



Renault et al., 2021

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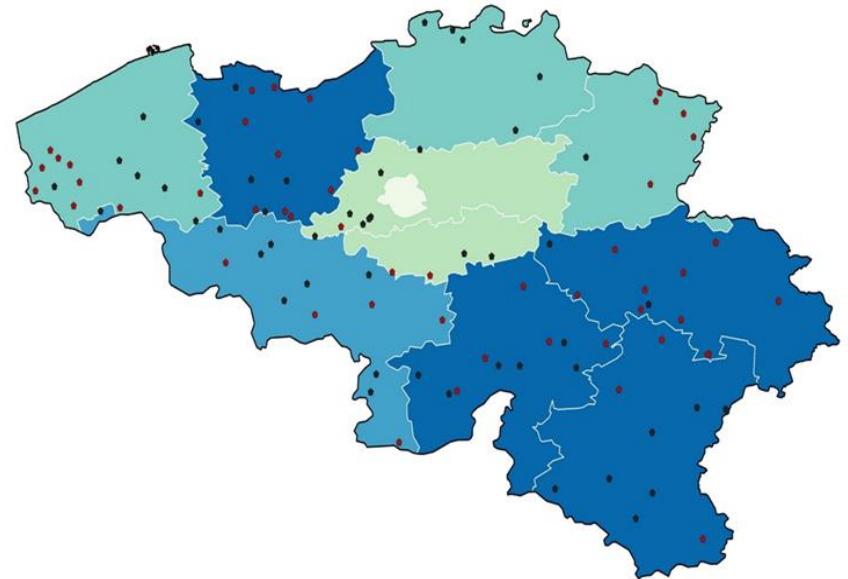
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Farm survey: implementation level of BSM

- Face to face interviews: 1-3 hours
- 100 cattle farms (50 dairy; 50 beef)
- + 20 veal farms

Cattle farms and farmers profile

- 50% dairy and 50% beef
- 12 females / 88 males
- 3- 66 years of experience
- 8 organic farms
- 24 - 649 heads



**BOBIOSEC
project**



Preventive Veterinary Medicine 179 (2020) 104992



Contents lists available at [ScienceDirect](#)

Preventive Veterinary Medicine

journal homepage: www.elsevier.com/locate/prevetmed

A risk-based scoring system to quantify biosecurity in cattle production

Bert Damiaans^{a,*}, Véronique Renault^b, Steven Sarrazin^a, Anna Catharina Berge^a, Bart Pardon^c, Claude Saegerman^b, Jeroen Dewulf^a

Main results

- For all production systems, both internal and external BS were **considered low**, resulting in low mean total BS scores of 39.7 points for veal (SD = 7.4), 44.3 for beef (SD = 8.4), and 48.6 points for dairy farms (SD = 8.1), out of a maximum of 100 points.
- For all farm types, the scores for **internal BS were lower compared to external BS.**
- **Veal farms** scored significantly **lower for “purchase”** than beef and dairy, while scoring higher for the other subcategories of external BS.
- In **dairy and beef**, **“purchase and reproduction”** was the **highest** scoring subcategory.
- For internal biosecurity, **“health management” was particularly low** in the three farm types, while subcategories exceeding 50 points were rare.

SWOT analysis on cattle BS



pathogens



Review

Biosecurity at Cattle Farms: Strengths, Weaknesses, Opportunities and Threats

Véronique Renault ¹, Marie-France Humblet ², Phuong N. Pham ³ and Claude Saegerman ^{1,*}

SWOT analysis on BS

- BS in cattle farming remains relatively low and faces **multiple challenges**.
- Its future improvement requires the different **stakeholders** to agree on shared goals and objectives and to carefully consider animal, public and environmental health, as well as socioeconomic and cultural factors.
- Further **cost efficiency studies** are required to identify the most important biosecurity measures and convince the stakeholders of their utility and benefits.
- Cattle farmers rely mainly on rural veterinarians for technical guidance and consider them as trustful informants. To be more effective in promoting these good practices, **rural veterinarians** need a proper guidance from the authorities, a proper training on biosecurity and communication, as well as an enabling environment.

Farmer's perception

ORIGINAL ARTICLE

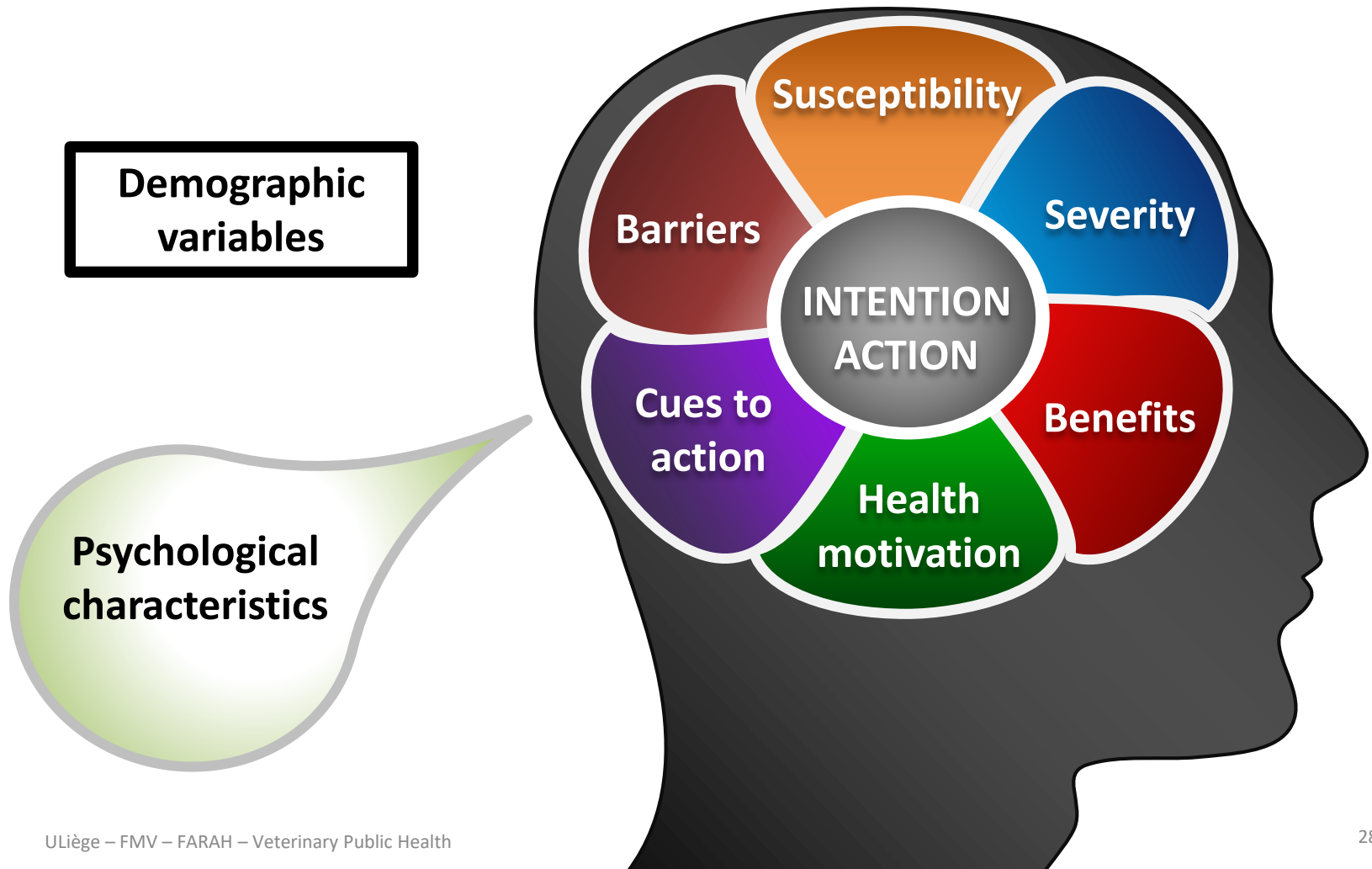
Transboundary and Emerging Diseases

WILEY

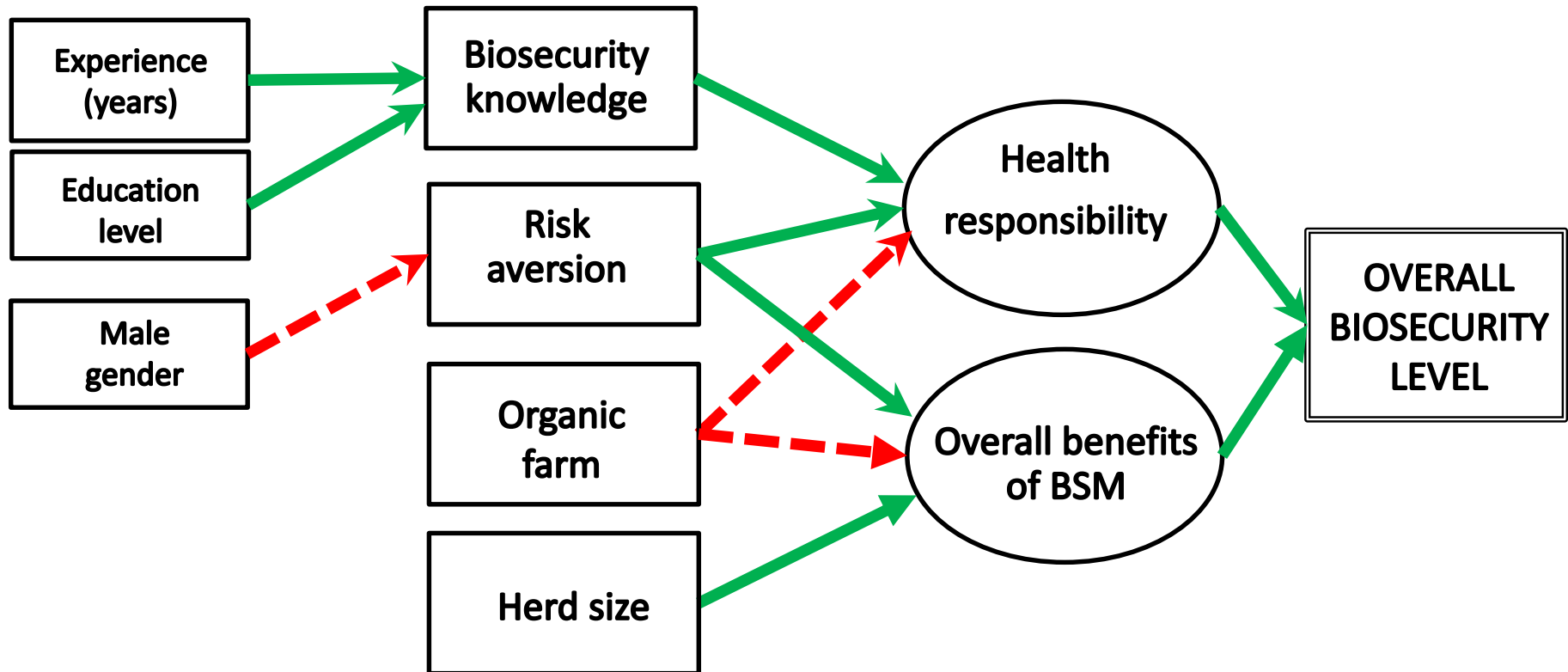
Cattle farmers' perception of biosecurity measures and the main predictors of behaviour change: The first European-wide pilot study

Renault et al., 2021

Health belief model (online survey; N=701)



Factors determining BSM implementation



Veterinarian's perception

ORIGINAL ARTICLE

WILEY

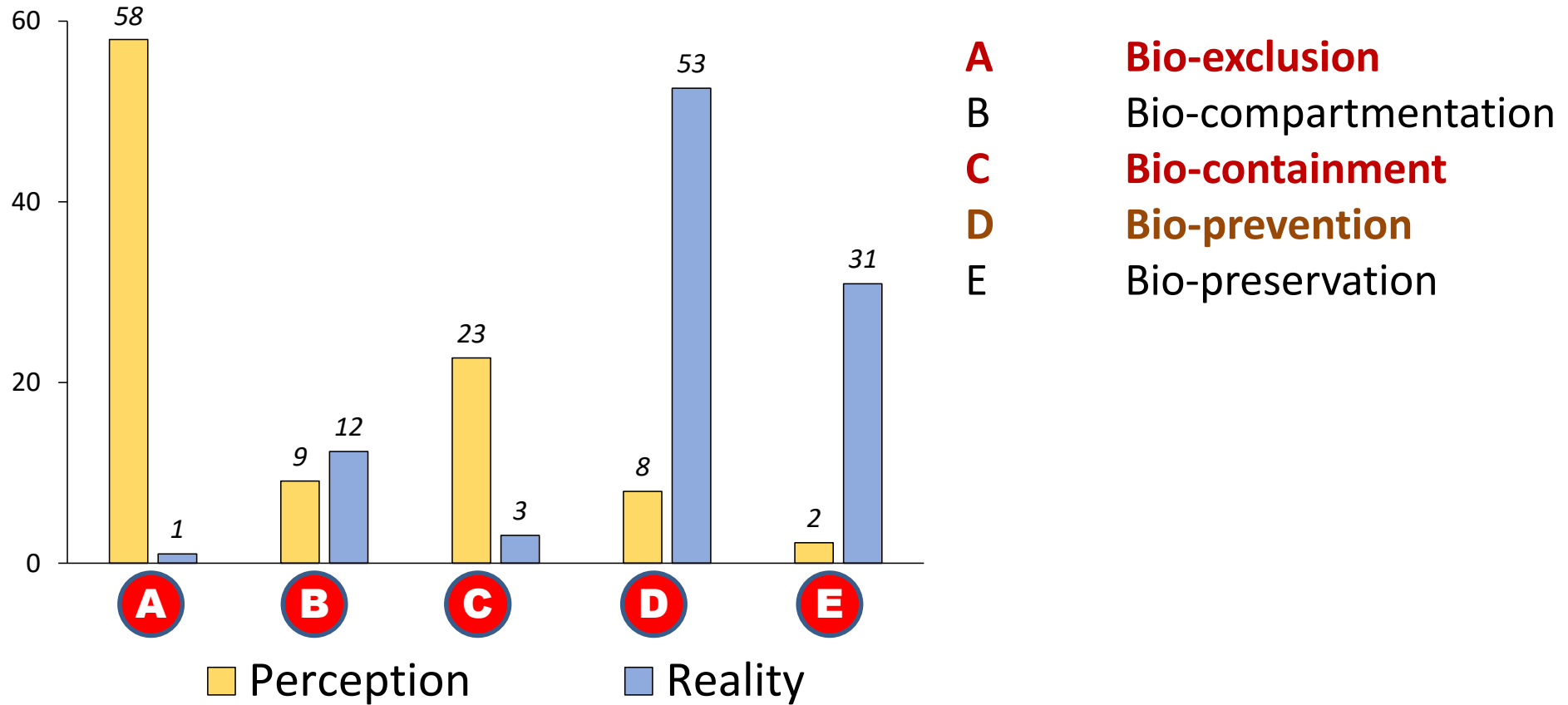
Transboundary and Emerging Diseases

Rural veterinarian's perception and practices in terms of biosecurity across three European countries

Renault et al., 2018

Survey: N=97

Perceived vs. actual implementation





Trust in professional visitors

89 % : biosecurity level
sufficient or largely sufficient

71% : veterinarian =main
source of information
regarding biosecurity

15% of hygiene measures
before entering

Purchase advises:

- minimal purchases and mandatory test (64%)
- quarantine: 0%



Professional responsibility in preventing disease spread

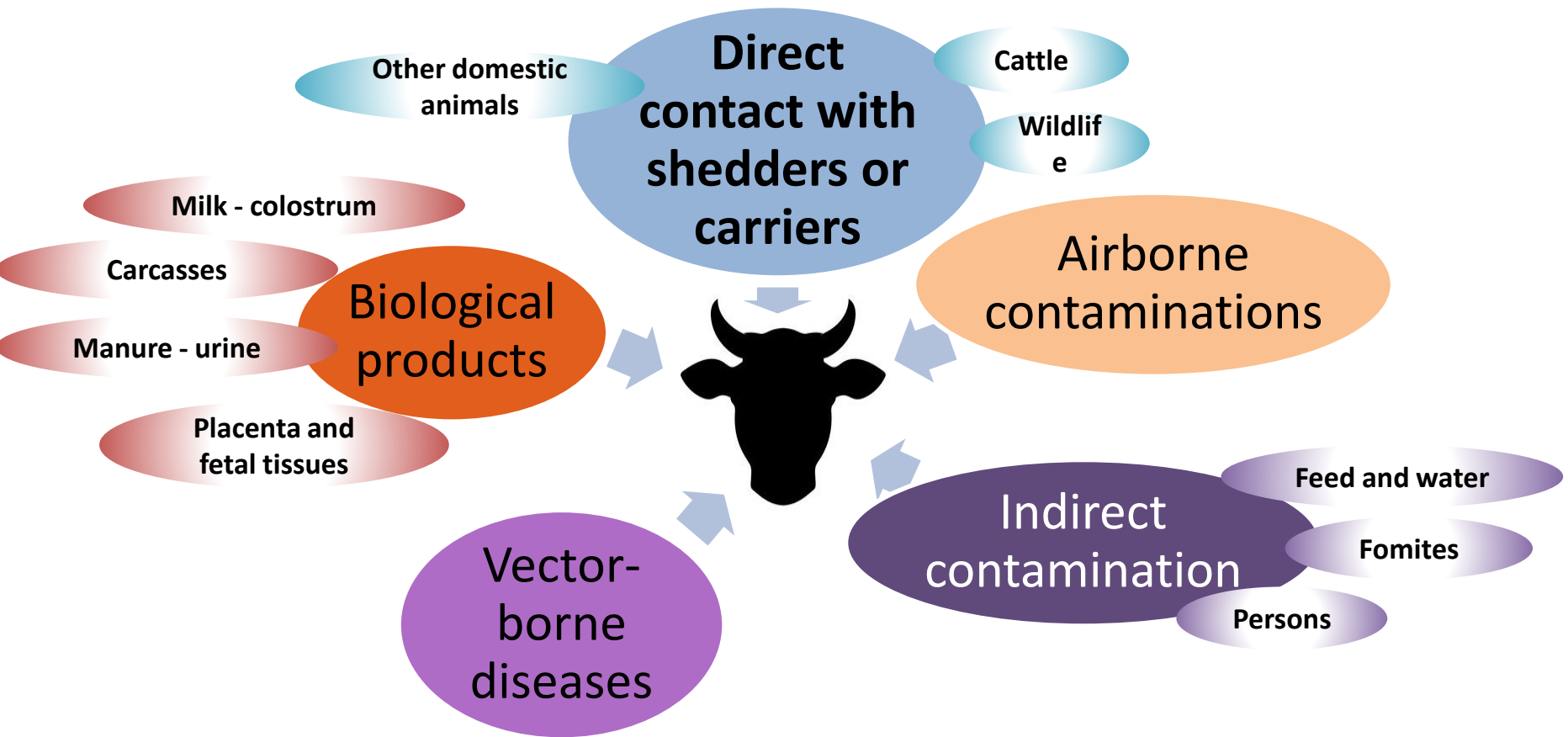
Key role to play in terms of technical guidance

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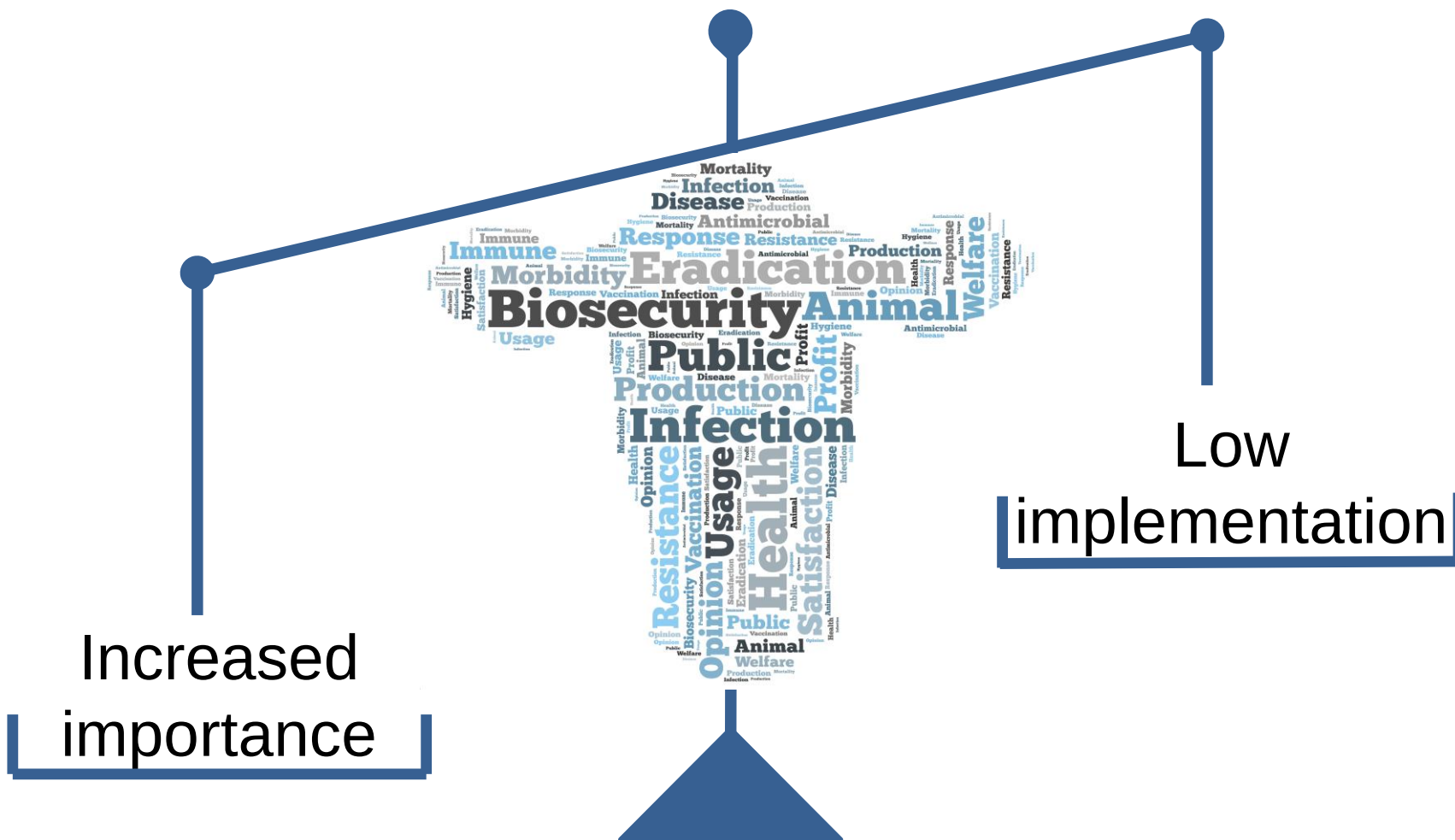


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Contamination risks to be mitigated



Margin of progress in cattle

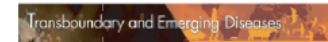


Benefit of implementation of BSM

Received: 9 March 2019 | Revised: 21 September 2019 | Accepted: 2 October 2019

DOI: 10.1111/tbed.13396

ORIGINAL ARTICLE



WILEY

Pilot study assessing the possible benefits of a higher level of implementation of biosecurity measures on farm productivity and health status in Belgian cattle farms

Véronique Renault¹ | Marc Lomba² | Laurent Delooz² | Stefaan Ribbens³ |
Marie-France Humblet⁴ | Claude Saegerman¹ 

Main results

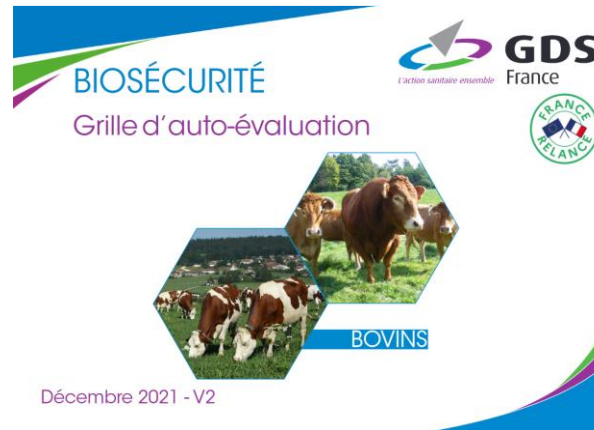
- A general BS score and 5 sub-scores related to the 5 BS compartments (bio-exclusion, biocompartmentation, bio-containment, bio-prevention and bio-preservation) were calculated for each farm based on the implementation level of different BSM.
- The study highlighted a **significant and negative correlation between the mortality rates** in adult cattle (over 24 months of age) and young calves (aged 0–7 days) and different BS sub-scores.
- The study also demonstrated that the **farms having a higher general BS score were indeed more likely to have a BVD-free status.**
- These evidence-based findings are encouraging as they demonstrate the benefits of implementing BSM and could promote their adoption by farmers.

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Be educate and informed





COST
EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY

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Open call
Fund your network

SEARCH e-C

CA20103 - Biosecurity Enhanced Through Training Evaluation and Raising Awareness

<https://www.cost.eu/actions/CA20103/>



Use some platforms



Getting
Started



Beef
Biosecurity



Dairy
Biosecurity



Biosecurity
Tips



Biosecurity
Training



Disease
Transmission



Step 1:
Movement
Risks and
Biosecurity

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Step 2:
Biosecurity
Checklist –
Livestock and
Poultry

[Download PDF](#)



Step 3:
Biosecurity
Plan Template
for Livestock
and Poultry

[Download](#)



Protecting the
Herd/Flock



Biosecurity
Forms

Use (free) BS calculator

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Comment connaître le niveau de biosécurité de mon élevage bovin ?

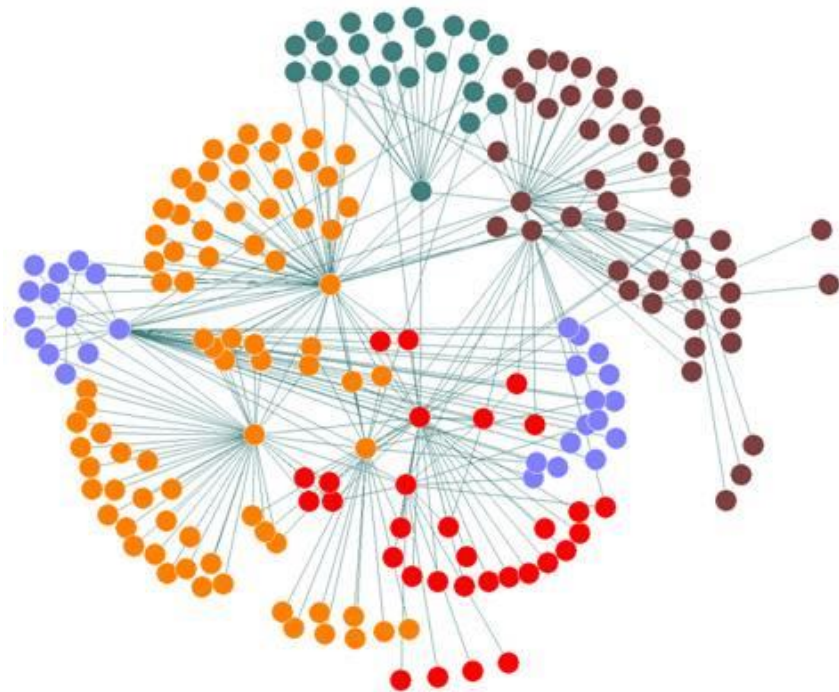
<https://questionnaires.gdsfrance.org/limesurvey/index.php/739755?lang=fr>



Bio-exclusion is not restricted at farm level

- Use the power of business network analysis
- Identify clusters
- Control these clusters (program of controls based on the risks) to secure the whole network

Cluster →



Several pillars to activate in the same time

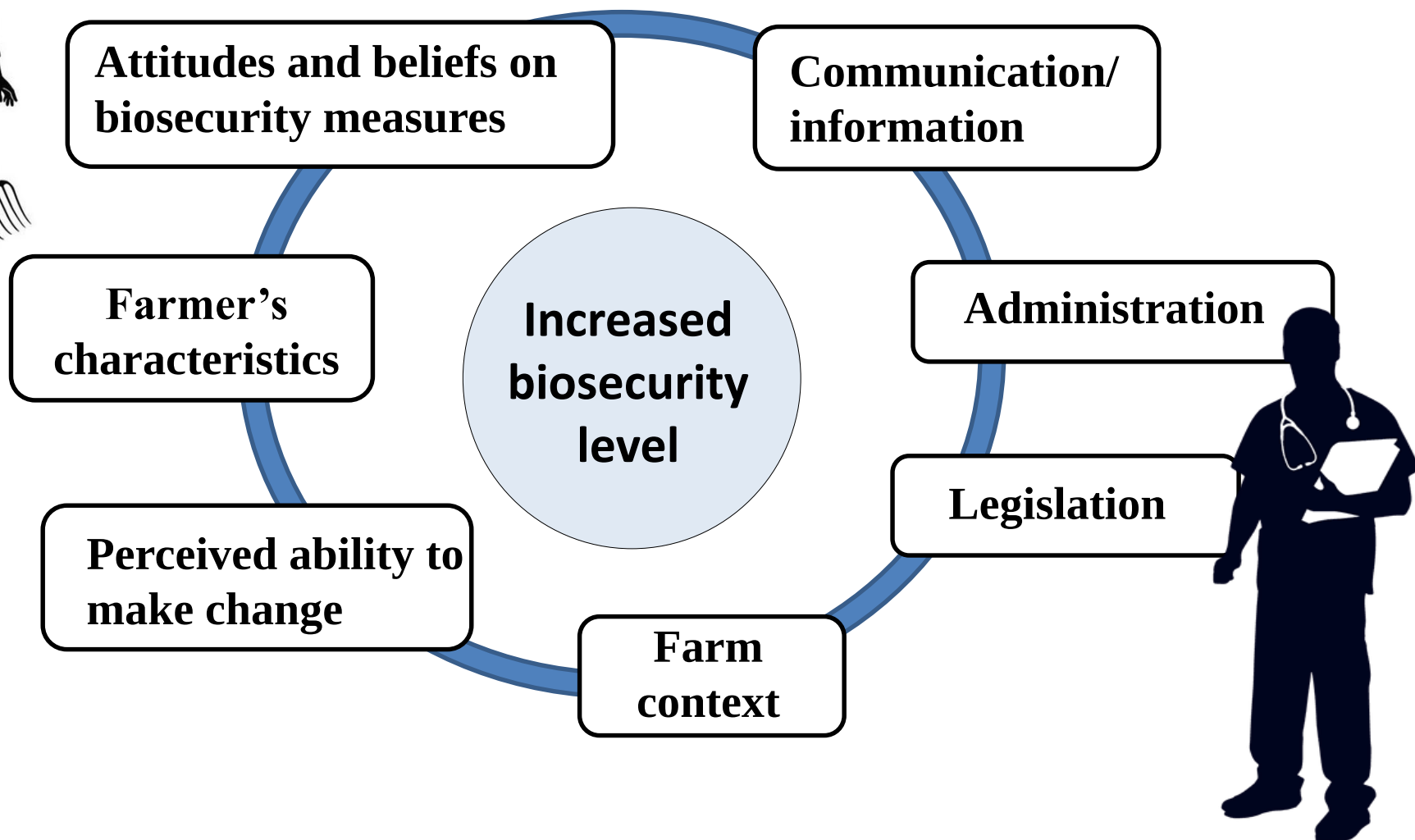


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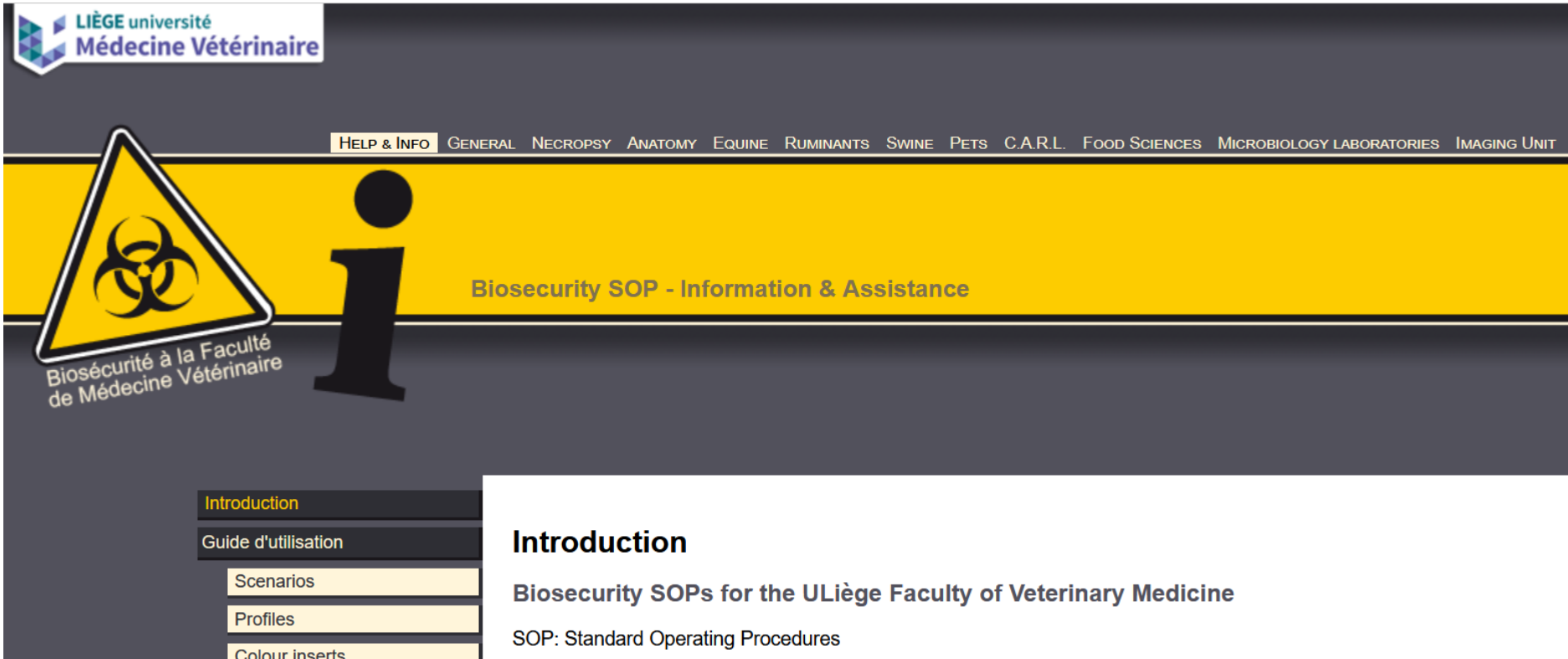


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Conclusion



Starting at the Veterinary Faculty



The screenshot shows the website of the LIÈGE université Médecine Vétérinaire. The header includes the university logo and a navigation menu with links: HELP & INFO, GENERAL, NECROPSY, ANATOMY, EQUINE, RUMINANTS, SWINE, PETS, C.A.R.L., FOOD SCIENCES, MICROBIOLOGY LABORATORIES, and IMAGING UNIT. The main content area features a large yellow banner with a biohazard symbol and the text "Biosécurité à la Faculté de Médecine Vétérinaire" and "Biosecurity SOP - Information & Assistance". A sidebar on the left contains a menu with links: Introduction, Guide d'utilisation, Scenarios, Profiles, and Colour inserts.

LIÈGE université
Médecine Vétérinaire

HELP & INFO GENERAL NECROPSY ANATOMY EQUINE RUMINANTS SWINE PETS C.A.R.L. FOOD SCIENCES MICROBIOLOGY LABORATORIES IMAGING UNIT

Biosécurité à la Faculté de Médecine Vétérinaire

Biosecurity SOP - Information & Assistance

Introduction
Guide d'utilisation
Scenarios
Profiles
Colour inserts

Introduction

Biosecurity SOPs for the ULiège Faculty of Veterinary Medicine

SOP: Standard Operating Procedures



> 50,000 visits

Google Analytics

BOBIOSEC project was translated in biocheck

**BOBIOSEC
project**



These surveys were developed by both Ghent & Liège Universities and was supported by the Belgian Federal Public Service for Health, Food Chain Safety and Environment (Contract RT 15/4 BOBIOSEC1)

- Veal calves
- Beef cattle 1.1
- Dairy cattle 1.1

Google Analytics



2765

Acknowledgments

Véronique Renault (ULiège)
11 dedicated papers
&
Bert Damiaans (UGent)
5 dedicated papers



BOBIOSEC project

**Measuring biosecurity in
Belgian veal calves and cattle
herds (all types): identification
of strengths and weaknesses
and propositions to prevent
the introduction and spread of
diseases including zoonoses**



Thank you