

BIOCHECK - MEASURING BIOSECURITY AS A TOOL FOR ZOONOSSES CONTROL

Rhea Creve

BIOCHECK.UGENT

= Online free biosecurity scoring system

www.biocheckgent.com

Quantification of biosecurity status on farm level

Research-based (Ghent University)

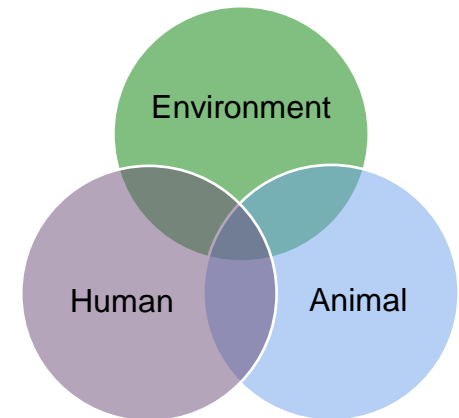
WHAT IS BIOSECURITY?

The combination of all measures taken to reduce the risk of **introduction** and **spread** of diseases at farm level, throughout a region, country or worldwide

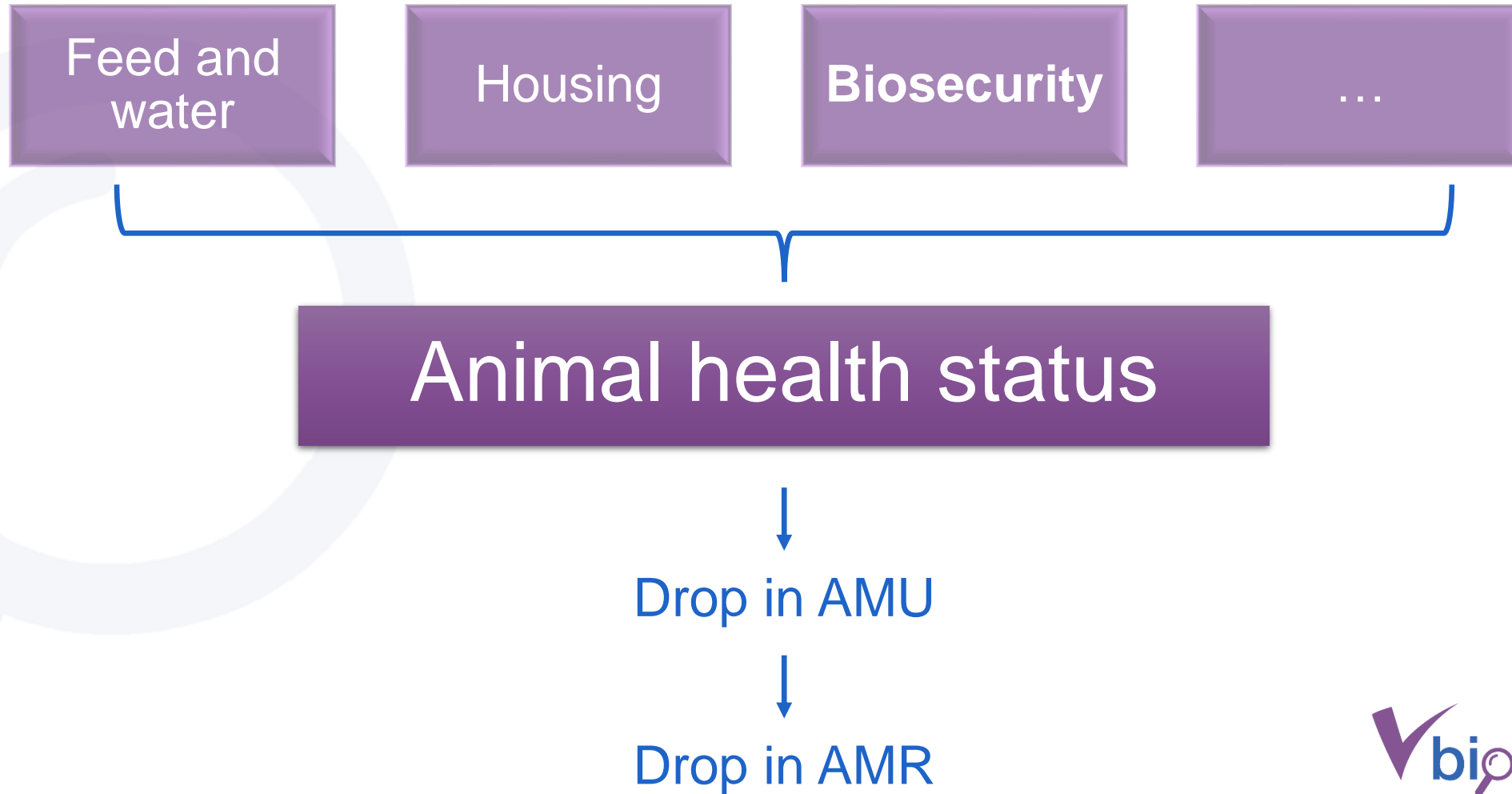


Improved animal health status

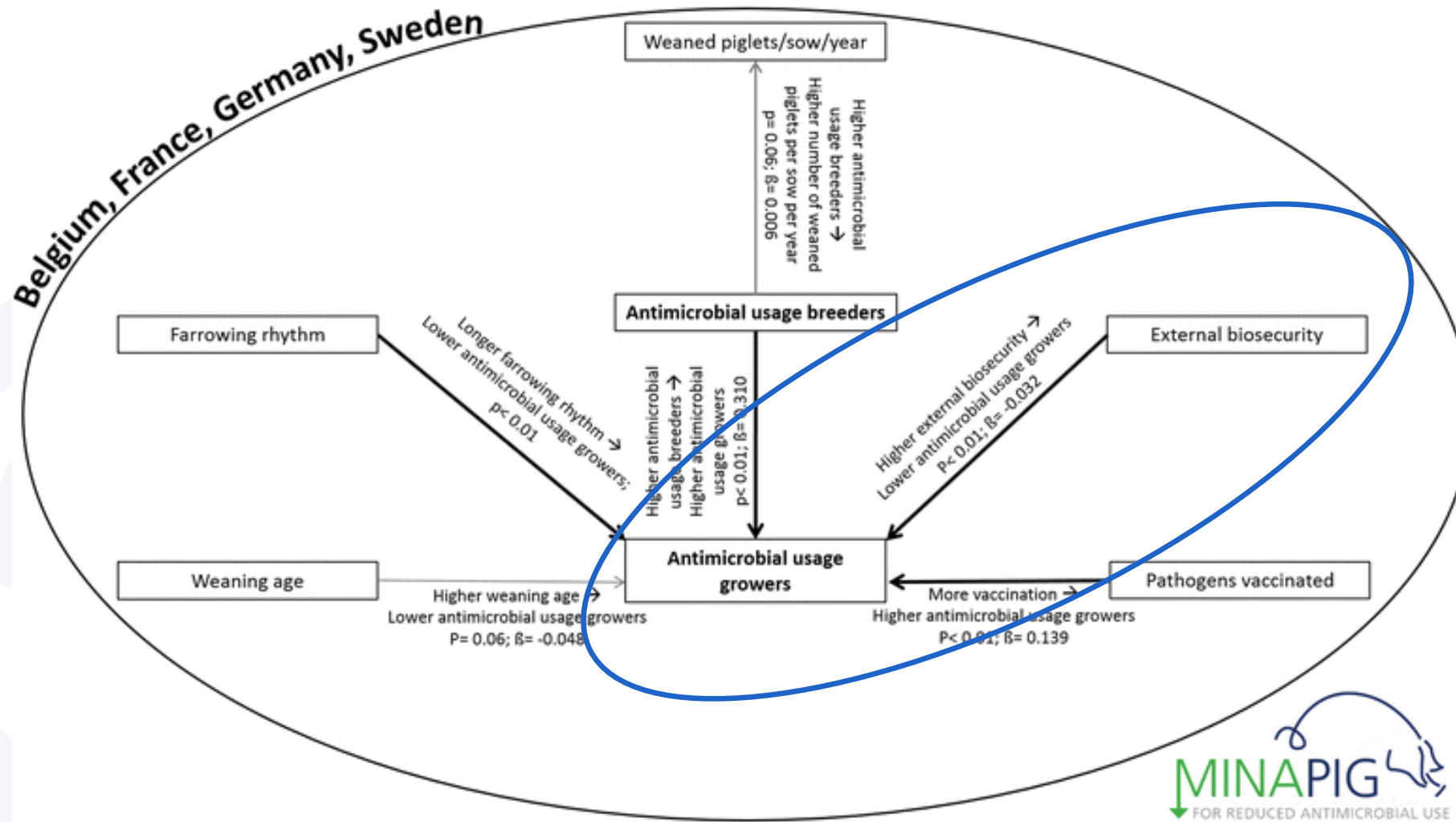
We focus on keeping animals healthy for the benefit of animal and human health



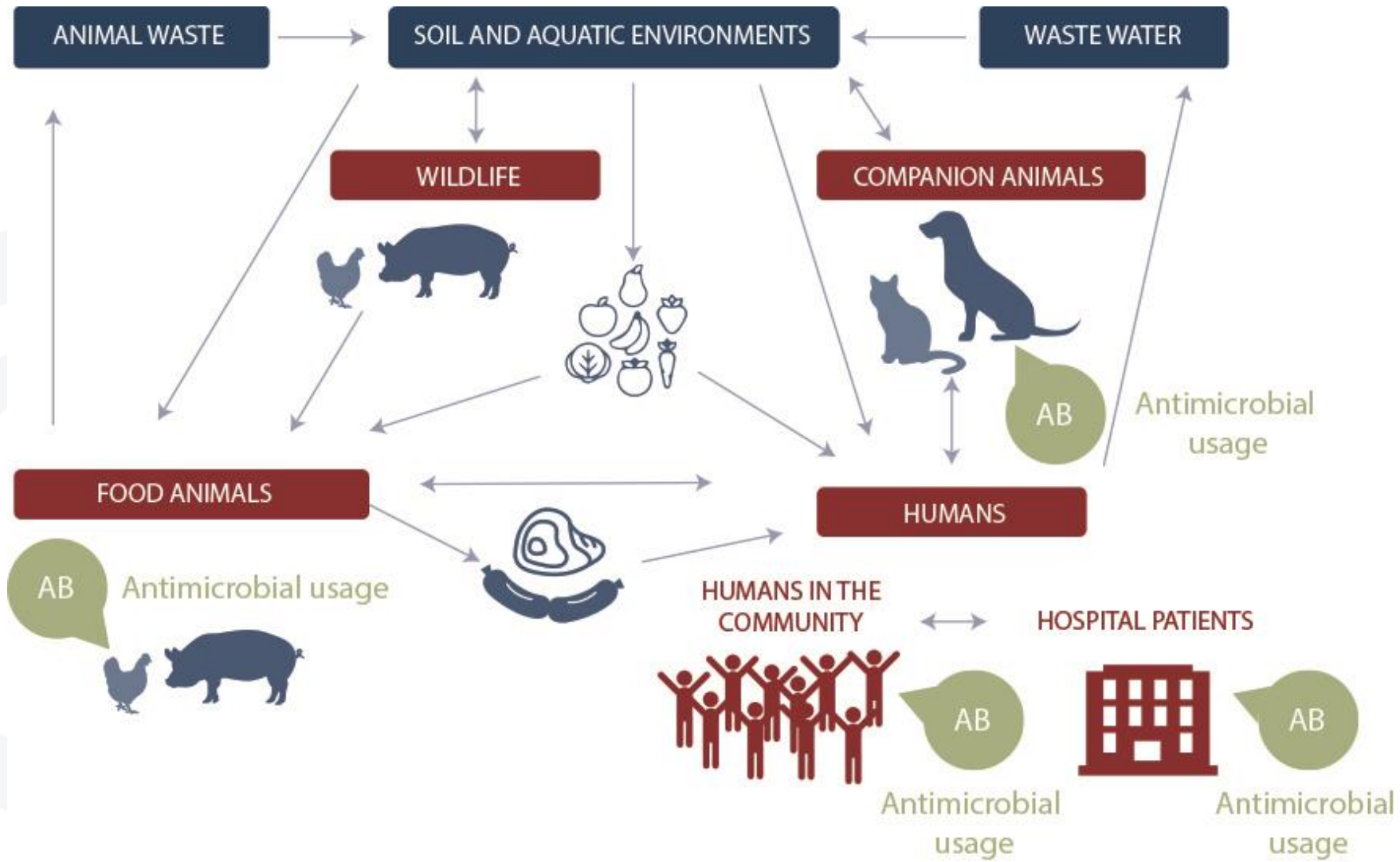
HOW CAN BIOSECURITY BENEFIT ANIMAL AND HUMAN HEALTH



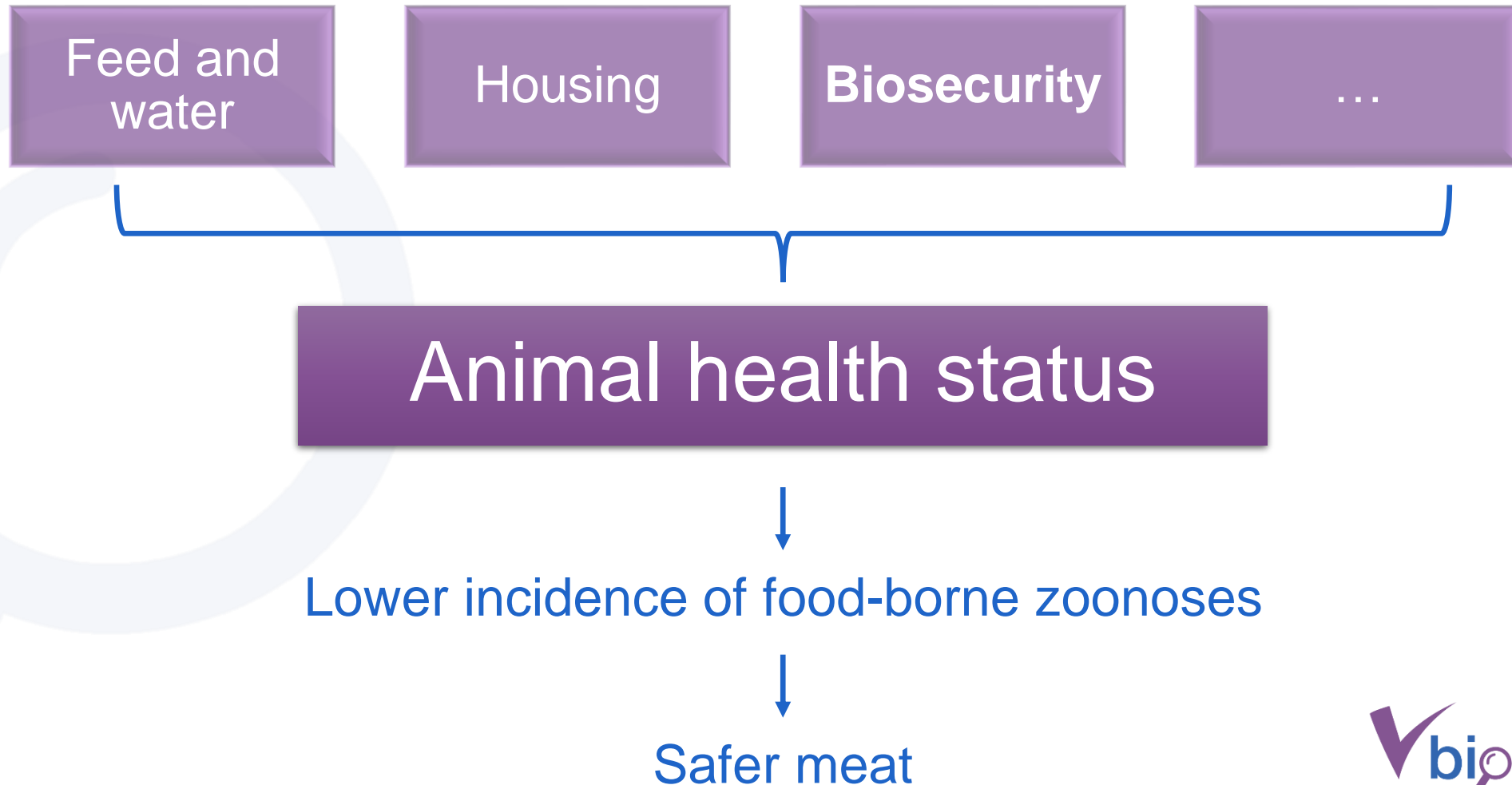
Belgium, France, Germany, Sweden



Postma et al., 2016



HOW CAN BIOSECURITY BENEFIT ANIMAL AND HUMAN HEALTH



WHAT IS BIOSECURITY?

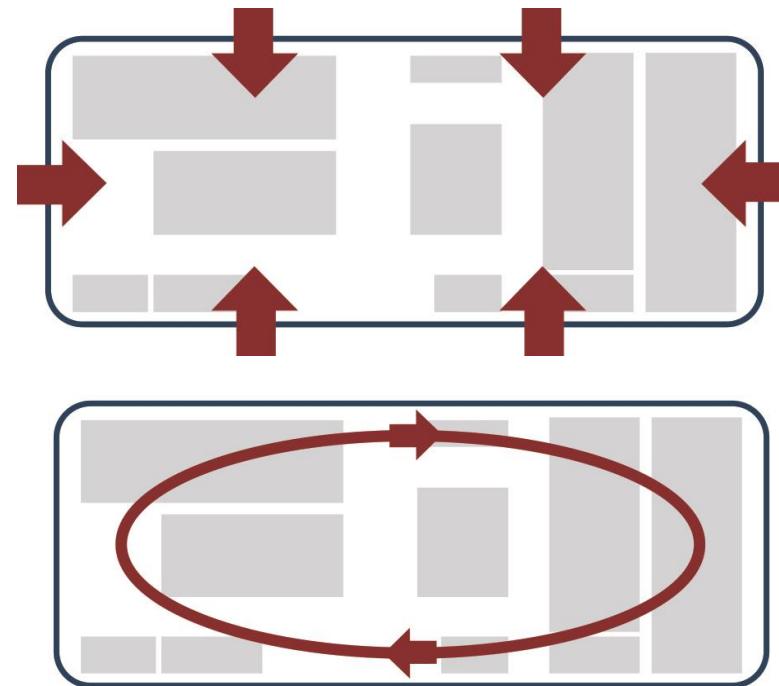
- **Preventive measures**
- **Combination** of actions
- **On different levels**

EXTERNAL biosecurity
= reduce introduction

Contact with the outside world

INTERNAL biosecurity
= reduce spread

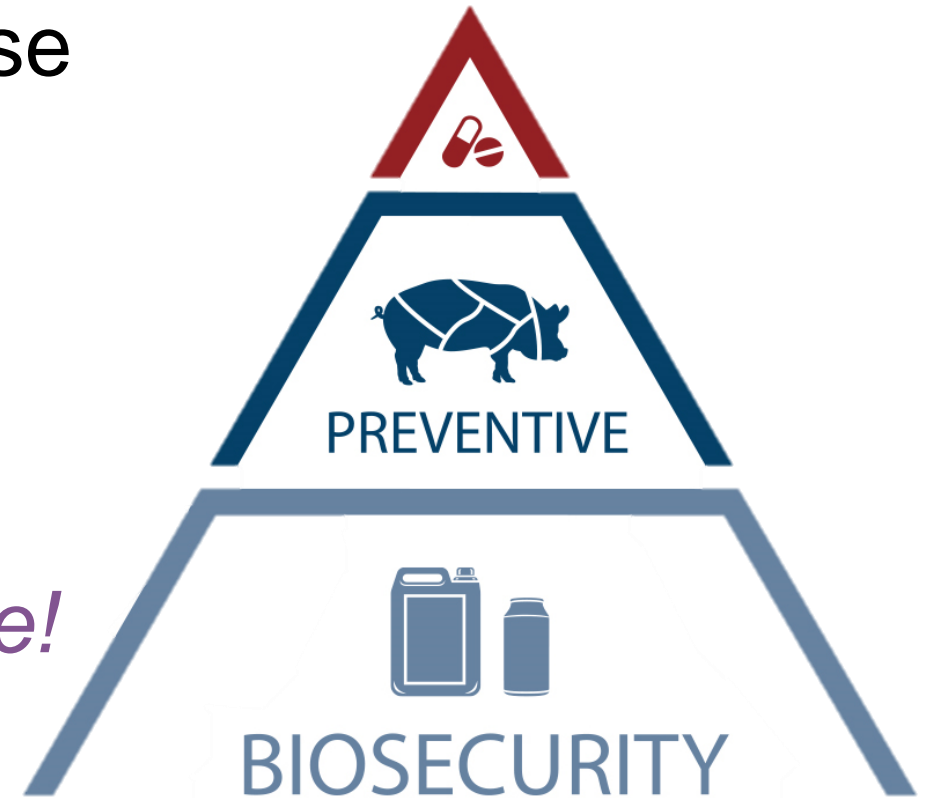
Internal movements



WHY IS BIOSECURITY IMPORTANT?

Biosecurity is the basis of any disease control program

Prevention is better than cure!



HOW TO IMPLEMENT BIOSECURITY?

= Complex!

No protocol suitable for every herd



HOW TO IMPLEMENT BIOSECURITY?

Breaking the infection cycle of pathogens
through prevention of different transmission routes



Disease specific

→ [Biocheck.UGent](https://biocheck.ugent.be)


Generic measures

But if you can't measure it, you can't improve it!



BIOCHECK.UGENT

= research based, free, online **scoring system** that allows the **quantification of biosecurity** at farm level

- Different animal species, different languages
- Growing number of users worldwide 
- **Largest database** on biosecurity in animal production (over 36 000 entries)



28830



5097



2872

Quantification of biosecurity status on farm level

- ↳ Comparing scores between different flocks
- ↳ Comparing scores between different countries
- ↳ Comparing scores in time

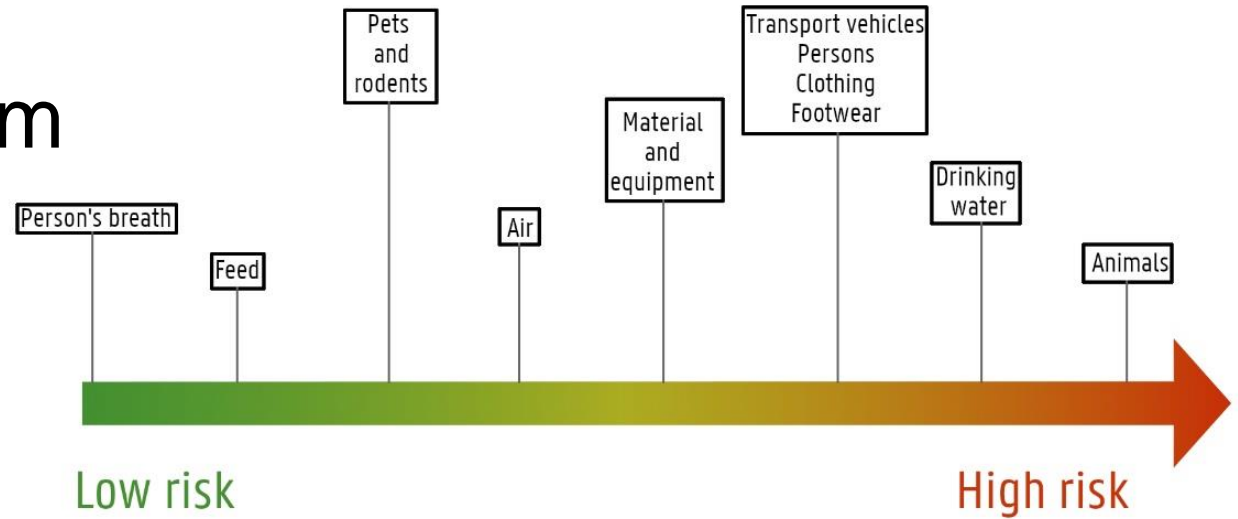
Taking different **risks** into account

Risk-based scoring system

Weighted expert scores

↳ based on scientific research

↳ risk for transmission: direct vs. indirect contact



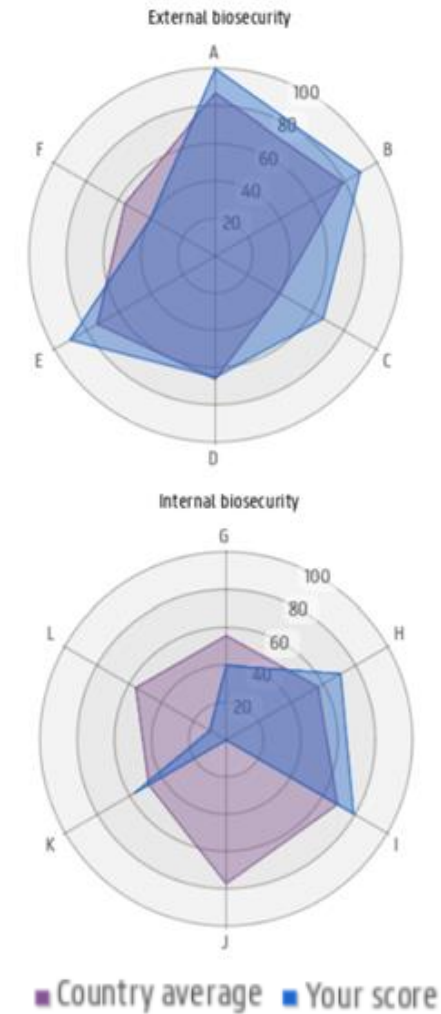
BIOCHECK.UGENT

User input

Comparative
scoring

Report

Subcategory	Your score	Country average	World average
External biosecurity			
A. Purchase of breeding pigs, piglets and semen	100 %	87 %	89 %
B. Transport of animals, removal of carcasses and manure	90 %	79 %	72 %
C. Feed, water and equipment supply	67 %	40 %	50 %
D. Visitors and farmworkers	65 %	66 %	69 %
E. Vermin and bird control	90 %	73 %	67 %
F. Location of the farm	40 %	56 %	70 %
Subtotal External biosecurity	80 %	70 %	72 %
Internal biosecurity			
G. Disease management	40 %	56 %	66 %
H. Farrowing and suckling period	71 %	57 %	53 %
I. Nursery unit	79 %	69 %	65 %



ADVANTAGES BIOCHECK.UGENT

- Scoring system → efficient tool to quantify the biosecurity level on livestock farms
- Elucidates strong and weak points of the farm
- Helps to set priorities for improving and monitoring biosecurity status



Management and Production

Quantitative assessment of biosecurity in broiler farms using Biocheck.UGent in Central Luzon, Philippines

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Biosecurity Level Practices in Pig and Poultry Production in Vietnam

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Abstract | The objective of this study was to score the biosecurity status of pig and poultry production systems in Vietnam. The project surveyed 35 pig and 35 poultry farms, in Hanoi and Dong Nai provinces respectively, using the Biocheck.UGentTM tool. The Biocheck.UGent tool comprises 109 pig and 79 poultry questions subdivided within breeds into the external biosecurity and the internal biosecurity question sets. External and internal biosecurity scores for pig farms were similar (53,56% and 55,05%, $p>0.05$). By contrast, for poultry farms, the external score was lower than the internal score (59,55% and 65,18%, $p<0.05$). For the external biosecurity of pig farms, purchasing animals and semen scored highest, whereas entrance of personnel and visitors scored lowest. For the internal biosecurity of pig farms, disease management scored highest. For the external biosecurity of poultry farms, purchase of day-old chicks scored highest. For the internal biosecurity of poultry farms, supply of material and disease management scored highest whilst removal of manure and dead animals scored lowest. In conclusion, whilst there was some variation in scores between and within external or internal factors for the pig and poultry farms surveyed, relatively low scores throughout the study indicate opportunities for improvement in all factors considered.

Keywords | Internal biosecurity, External biosecurity, Pig farm, Poultry farm, Biocheck tool



Antimicrobial use, biosecurity, herd characteristics, and antimicrobial resistance in indicator *Escherichia coli* in ten Finnish pig farms

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Evaluation of biosecurity practices in a laying hens farm using Biocheck.UGent



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^aLaboratory of Environment, Health and Animal Production, University of Batna, Algeria.





ABSTRACT The Biocheck.UGent scoring system was developed to measure and quantify the level of biosecurity in animal husbandry. This tool is composed of all the relevant elements of biosecurity in poultry farms (broilers and laying hens) and is subdivided into external and internal biosecurity. The peculiarity of this scoring system is that it takes into account the relative importance of the different aspects of biosecurity, resulting in a risk-weighted score. The biosecurity scores obtained are provided immediately after completing the questionnaire and the scores for each sub-category can be compared to global averages to allow the poultry farmer to compare the results obtained and correct any anomalies that are on their farm. In Algeria, preliminary results from a survey in poultry houses of 30.000 laying hens show a wide range of biosecurity levels on that farm, with internal biosecurity scores ranging from 6 to 72% and external biosecurity scores ranging from 28 to 92% in the subgroups. The overall scores were 50% and 54%, respectively. These early results show that despite the well-known importance of biosecurity, there is a lack of implementation of many biosecurity measures.

KEYWORDS: poultry diseases; poultry farmers; veterinary prophylaxis.

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ADDITIONAL PRODUCTS / SERVICES

- Training and education 
- API connection with your software 
- Professional user 
- Consultancy 

PROFESSIONAL USER

Basic

- ✓ Different species and languages
- ✓ Basic report with scores
- ✓ Printable surveys
- ✗ Personalised feedback
- ✗ Share reports
- ✗ Compare reports
- ✗ Export reports
- ✗ Visualise progress
- ✗ E-learning

→ Start the Biocheck.UGent

Advanced

- ✓ Different species and languages
- ✓ Basic report with scores
- ✓ Printable surveys
- ✓ Personalised feedback
- ✓ Share reports
- ✓ Compare reports
- ✓ Export reports
- ✓ Visualise progress
- ✓ E-learning

→ Become an advanced user

Professional

less odour development, a decrease in the attractiveness for insects and also a reduction in the frequency of visits by the rendering company.

When **handling dead pigs**, it is always recommended to **either wear disposable gloves or to clean and disinfect your hands thoroughly after every carcass manipulation**. By doing this consistently, the person who comes into contact with the carcasses will protect himself from the pathogens, while also preventing the further spread of infectious germs on the farm.

D. Visitors and personnel

A **pig-free period of at least 12 hours should be a requirement for all visitors** who wish to enter the farm premises; this is to prevent infectious germs from non-proprietary pigs entering your farm. However, different studies have shown that setting up a downtime only has a little additional effect on the transmission of infectious diseases if other appropriate biosecurity measures are implemented at the farm. Therefore, **correctly applying biosecurity measures on your farm will always be more important than setting up a pig-free period**. However, requiring a 'downtime' ensures that unwanted visitors will not enter the stables, which will have a positive effect on your farm's biosecurity level.

The **hygienic measures** using the hygiene lock, wearing farm-specific clothes and shoes, maintaining hand hygiene and consistently practising the clean and dirty road principle, **must be carried out by everyone** including the farmer and his/her staff. Because, everyone can be a mechanical vector, e.g. by carrying pathogens with them through contaminated particles of excreta on their clothes, shoes and/or hands.

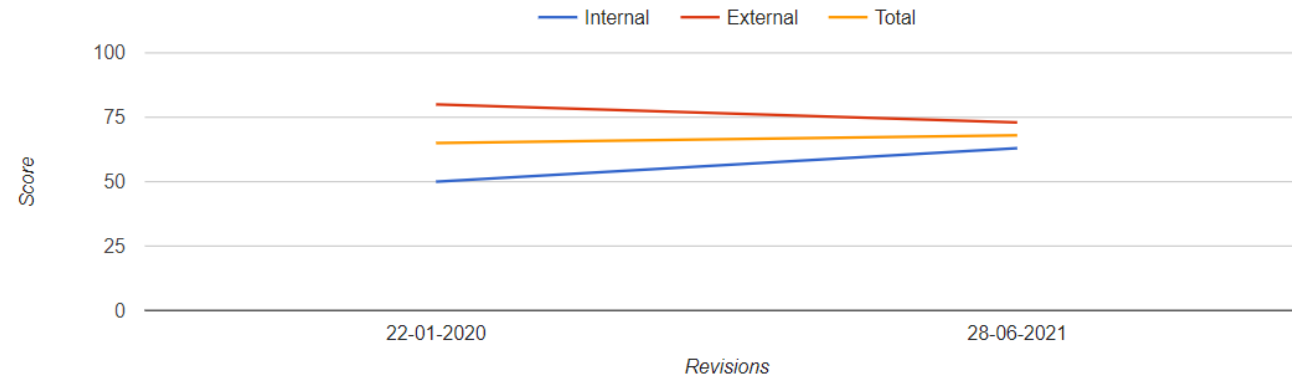
C. Feed, water and material supply

The drinking water, when contaminated, is an important source for pathogens, which will easily and quickly spread within your farm. Therefore, it is vital to carry out **regular quality analyses of the drinking water**. This is preferably done **more than once a year**, especially when you notice health problems in the pig stables. For an efficient and complete water quality analysis, it is always necessary to take samples **at both your water source or water storage tank and the end of the water pipelines in the stable**, i.e. at the last drinker. Furthermore, the water pipelines must be thoroughly **cleaned and disinfected** between two production cycles to ensure optimal water quality.

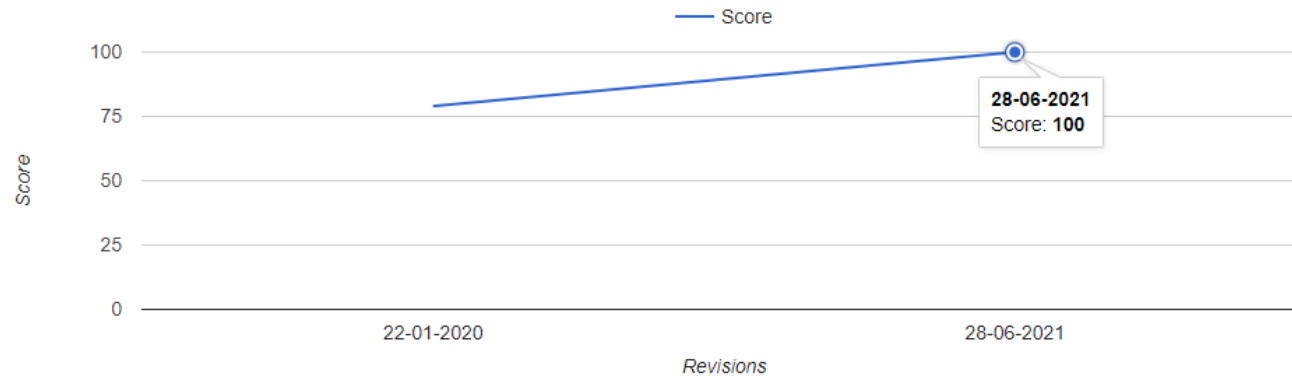


All material and equipment carry the risk of being contaminated with all kinds of pathogens. Therefore, it is recommended to consistently take the same specific measures when any kind of material (i.e. shared and new equipment) is introduced on your farm. A **pass-through system with ultraviolet germicidal irradiation**

Internal / External / Total



I. Nursery unit





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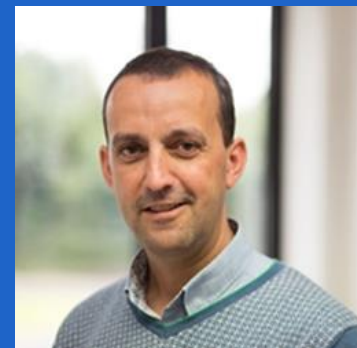


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