

Bioveiligheid in de rundveehouderij: Van theorie naar praktijk



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BIOVEILIGHEID

=

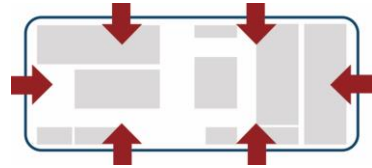
De combinatie van alle maatregelen die worden genomen om het risico op **introductie** en **verspreiding** van infectieuze agentia op een bedrijf te voorkomen



Bioveiligheid

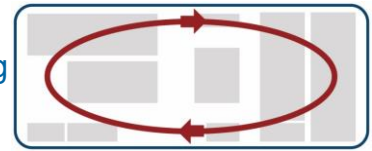
EXTERNE BIOVEILIGHEID

= Verminderen van de kans op introductie



INTERNE BIOVEILIGHEID

= Verminderen van de verspreiding



Waarom bioveiligheid?

Bioveiligheid is (zou moeten) de basis van ieder diergezondheidscontrole programma

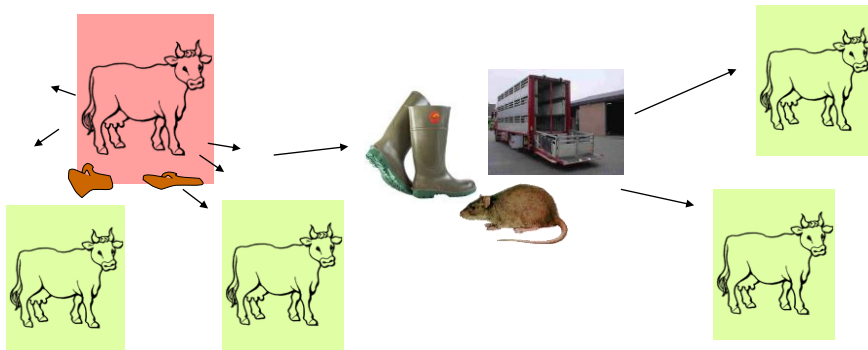


Principes van bioveiligheid

1) Hou infectieuze en gevoelige dieren gescheiden

→ vermijd direct en indirect contact!

(all-in/all-out, looplijnen, ziekenboeg, ...)



Principes van bioveiligheid

PROPER
(gevoelige dieren)

← Maatregelen

VUIL
(directe en indirecte
bronnen van infectie)

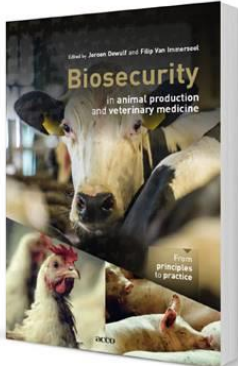
- Afhankelijk van de bedrijfssituatie (status, type,...)
- Moet goed en consequent gedaan worden

Table 1. Overview of transmission pathways for epidemic and endemic cattle diseases of relevance for Belgium.

Disease	Species affected and asymptomatic carriers				Direct contact				Indirect contact										References			
	Zoonotic	Other reservoirs	Asymptomatic carriers	Wildlife reservoir	Animal to animal	Transplacental	Venereal	General	People	Animals	Rodents	Fomites	Syringes/needles	Ingestion		Inhalation				Soil / Manure	Vector	
														Feed	Water	General	Droplet	Aerosol				
Anaplasmosis		Mammals, birds	X	X		X	X					X								X	[1-4]	
Anthrax	X	Mammals, birds	X		X		X					X		X	X	X				X	X	[5, 6]
Aujeszky's Disease		Pigs, sheep, dogs, cats, rodents,....	X	X	X	X	X	X				X			X	X			X	X		[4, 7]
Babesiosis (bovine)	X	Buffalos, deer	X	X																X		[4]
Bluetongue		Ruminants, carnivores	X	X	X	X	X	X				X								X		[4, 7, 8]
Botulism	X	Most animals	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X		[9-19]
Bovine enzootic leucosis			X		X	X	X					X								X		[20-23]
Bovine herpesvirus 4		Ruminants	X				X							X	X	X						[24]
Bovine respiratory disease ^a		Ruminants	X	X	X		X	X	X	X	X			X	X	X	X	X				[25-123]
Bovine Spongiform Encephalopathy	X	Sheep, goats	X	X		X								X								[4, 7, 124, 125]
Bovine Viral Diarrhoea			X		X	X	X	X	X	X	X			X		X		X	X			[48, 65, 126-137]

Table 1. Overview of transmission pathways for epidemic and endemic cattle diseases of relevance for Belgium.

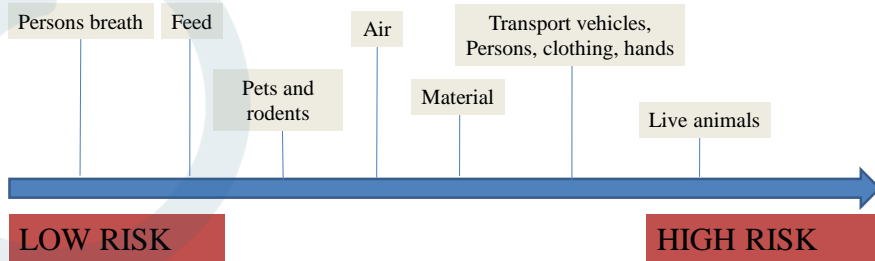
Disease	Species affected and asymptomatic carriers				Direct contact				Indirect contact										References			
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														Feed	Water	General	Droplet	Aerosol				
Anaplasmosis		Mammals, birds	X	X		X	X					X								X		[1-4]
Anthrax	X	Mammals, birds	X		X		X					X		X	X	X				X	X	[5, 6]
Aujeszky's Disease		Pigs, sheep, dogs, cats, rodents,....	X	X	X	X	X	X				X			X	X			X	X		[4, 7]
Babesiosis (bovine)	X	Buffalos, deer	X	X																X		[4]
Bluetongue		Ruminants, carnivores	X	X	X	X	X	X				X								X		[4, 7, 8]
Botulism	X	Most animals	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X		[9-19]
Bovine enzootic leucosis			X		X	X	X					X								X		[20-23]
Bovine herpesvirus 4		Ruminants	X				X							X	X	X						[24]
Bovine respiratory disease ^a		Ruminants	X	X	X		X	X	X	X	X			X	X	X	X	X				[25-123]
Bovine Spongiform Encephalopathy	X	Sheep, goats	X	X		X								X								[4, 7, 124, 125]
Bovine Viral Diarrhoea			X		X	X	X	X	X	X	X			X		X		X	X			[48, 65, 126-137]



Biosecurity in animal practice and Veterinary Medicine., 2018

Principes van bioveiligheid

2) Niet iedere transmissieroute is even belangrijk

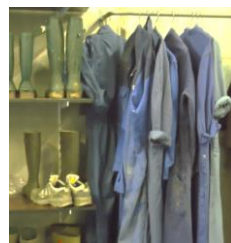


Principes van bioveiligheid

3) Verminder de algemene infectiedruk

→ doorbreek de infectiecyclus, verminder de druk op het immuun systeem ↓

(reiniging en desinfectie, vaccinatie, ...)



Principes van bioveiligheid

Waar is bioveiligheid het belangrijkst?

- A. Grote bedrijven
- B. Kleine bedrijven
- C. Onafhankelijk van de bedrijfsgrootte

Principes van bioveiligheid

4) Size matters



Principes van bioveiligheid

Veronderstel: kans op introductie van ziekte op uw bedrijf via de vrachtwagen die het voeder levert is 1 op 1000. En deze vrachtwagen komt wekelijks. Hoe groot is het risico op het einde van het jaar?

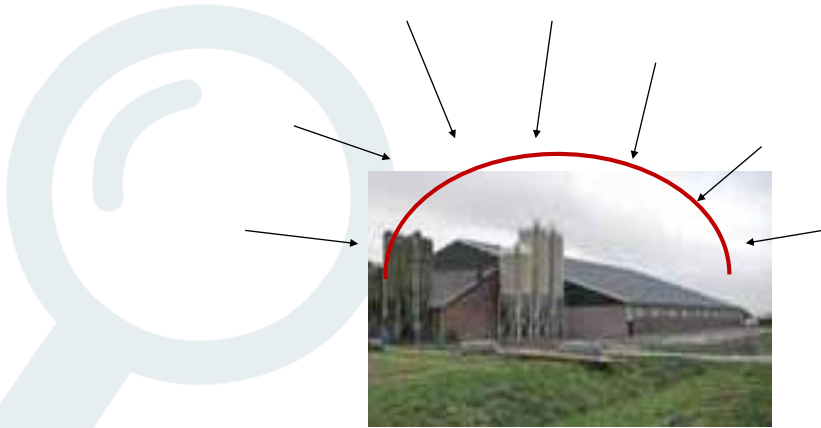
- A. +/- 0,5%
- B. +/- 5%
- C. +/- 50%

Principes van bioveiligheid

5) Frequency matters

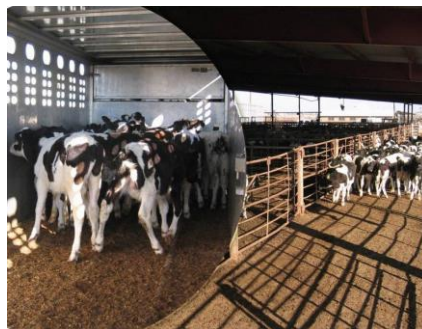
- 'Duizend keer een kleine kans wordt een grote kans'
 - Probabiliteit van transmissie (p)
 - **Frequentie van transmissie (n)**
- $P = 1 - (1-p)^n$
 - $p = 0.1\%$ (1 out of 1000)
 - $n = 52$ (e.g. weekly)
 - **5,06% = $1 - (1-0.001)^{52}$**

Externe bioveiligheid



Aankoop van dieren

- Koop zo weinig mogelijk (!! Vleeskalveren!!)
- Koop steeds van zelfde leverancier
- Hou rekening met de gezondheidsstatus van het oorsprongsbedrijf
- Stel een quarantaine in



Aankoop van dieren

- Quarantaine
 - Gescheiden luchtvolume
 - Aparte kledij en schoeisel
 - Handen wassen
 - AI/AO
 - Reinigen en desinfecteren
 - Tijd voor diagnose (>21 dagen)
 - Klinische inspectie
 - Labo



Tentoonstellingen

- Wees voorzichtig
- Bij terugkeer via de quarantaine



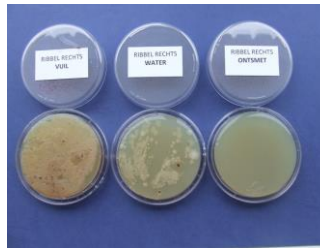
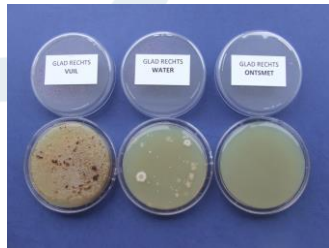
Toegangscontrole



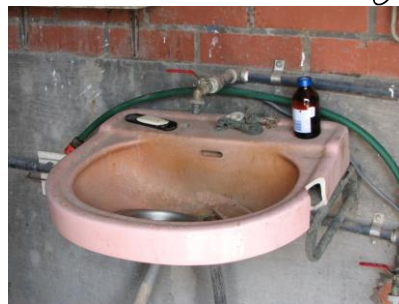
Toegangscontrole



Schoenen en kledij



Handen wassen



Handen wassen



Toegangscontrole

- Veel gemaakte fouten :
 - Geen bedrijfsspecifieke kledij / schoeisel
 - Voertuigen in de stal
 - Foutief gebruik van desinfectiebaden



Voeder, water en materiaal

- Hygiënische maatregelen
- Controle drinkwater



Voeder, water en materiaal

- Hygiënische maatregelen
- Controle drinkwater



Ongedierte en controle van vogels



- Vermijd nestplaatsen ratten en muizen



Ongedierte en controle van vogels



Weide contact

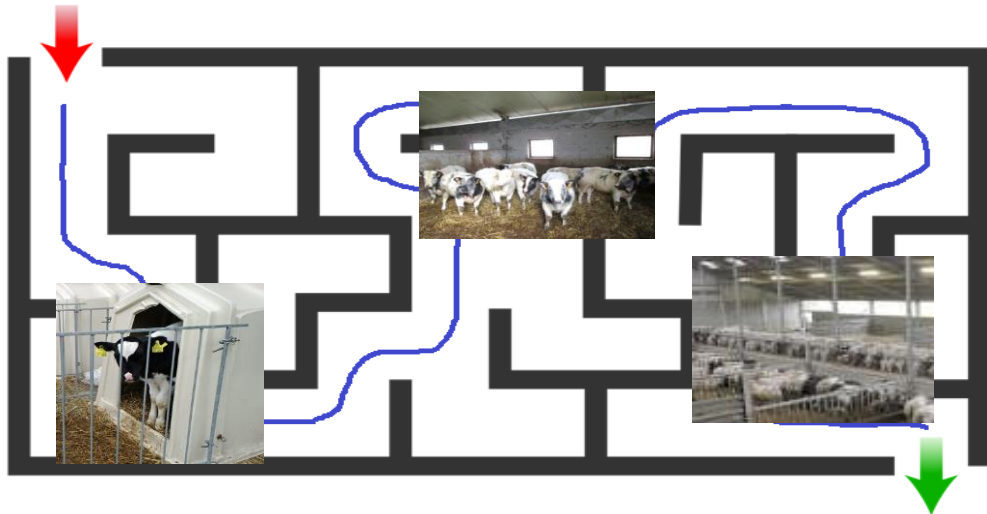
- Vermijd neus-neuscontact.
- Minimaal 3 m tussen omheiningen



Interne bioveiligheid



Looplijnen: van jong naar oud



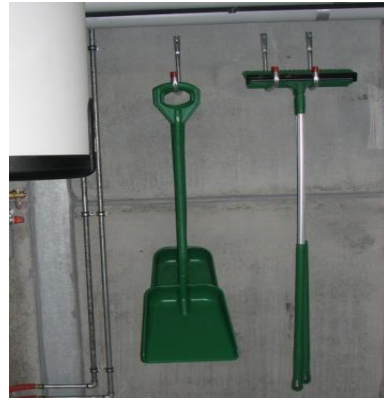
quarantaine ³¹

Aparte leeftijdsgroepen

- 0-2 maanden
- 2-6 maanden
- 6 maanden – 2 jaar
- > 2 jaar



Compartimenten en materiaal

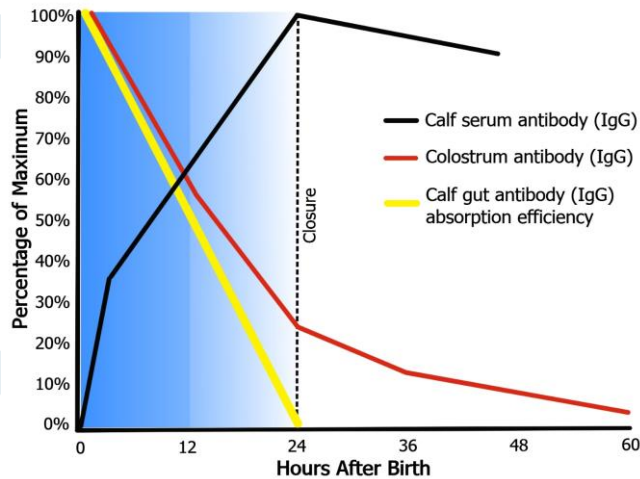


Kalving management

- Kalfbox
 - Gescheiden
 - Niet gebruiken als ziekenboeg
 - Apart schoeisel
 - Handen wassen
 - Reinigen en desinfecteren



Colostrum



Kalveropfok

- Aparte huisvesting



Kalveropfok

- Hygiëne melkemma's



Foto: Dr. Catharina Berge

Kalver opfok

- Hygiëne melkemma's



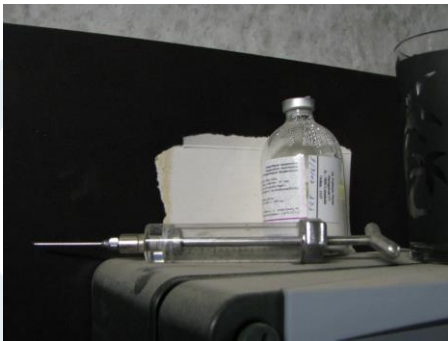
Foto: Dr. Catharina Berge

Gezelschapsdieren

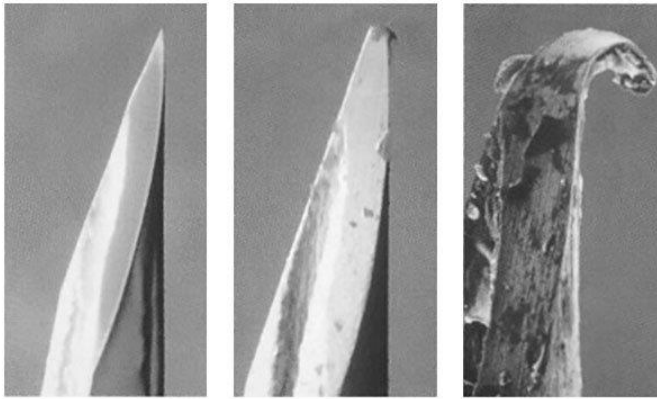
- Geen gezelschapsdieren in de stal



Spuiten en naalden



Spuiten en naalden



https://www.pig333.com/articles/drugs-and-needle-sticks-present-unintended-health-hazards_12915/

Reiniging en desinfectie

1. Droge reiniging en verwijderen organisch materiaal



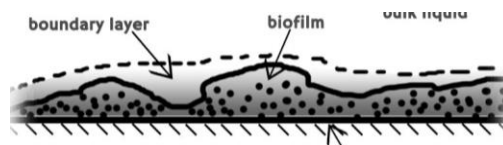
Reiniging en desinfectie

2. Inweken van alle oppervlaktes met detergent



Reiniging en desinfectie

2. Inweken van alle oppervlaktes met detergent



Reiniging en desinfectie

3. Reinigen onder hoge druk



Reiniging en desinfectie

4. Drogen van de oppervlaktes om verdunning te voorkomen



Reiniging en desinfectie

5. Ontsmetten van de oppervlaktes



Reiniging en desinfectie

6. Drogen van alle oppervlaktes



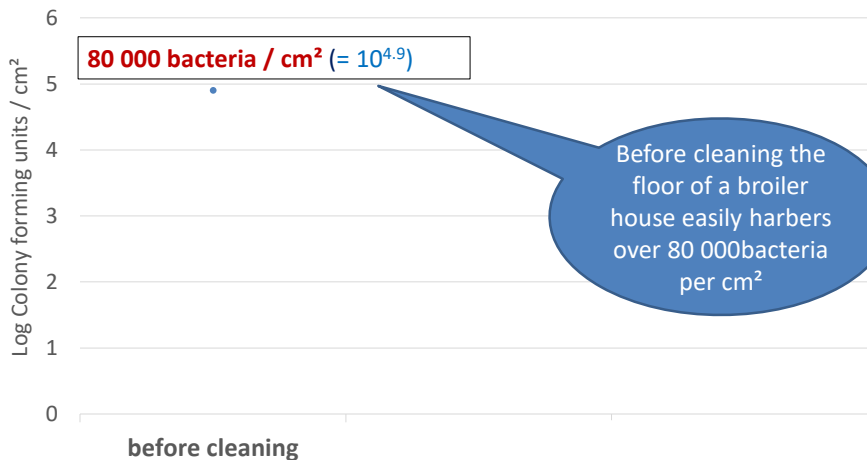
Reiniging en desinfectie

7. Testen van de effectiviteit



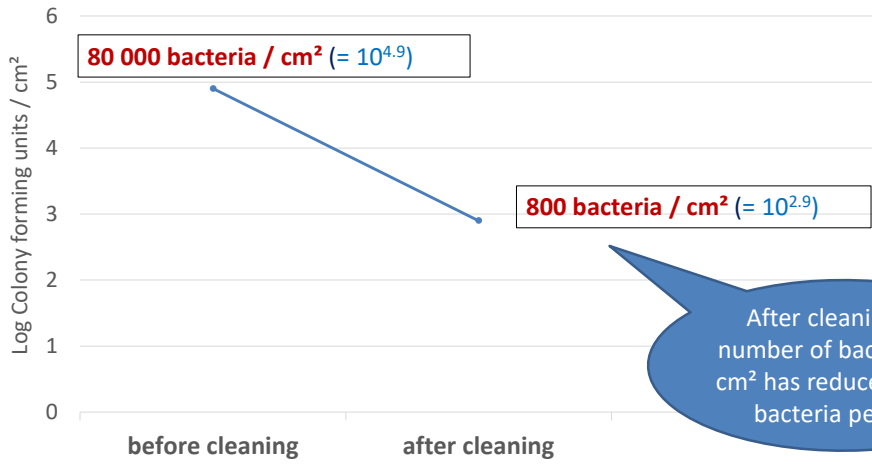
Score	KVE per plaat
0	0
1	1-40
2	41-120
3	121-400
4	> 400
4	ontelbaar

number of bacteria /cm² in poultry stable



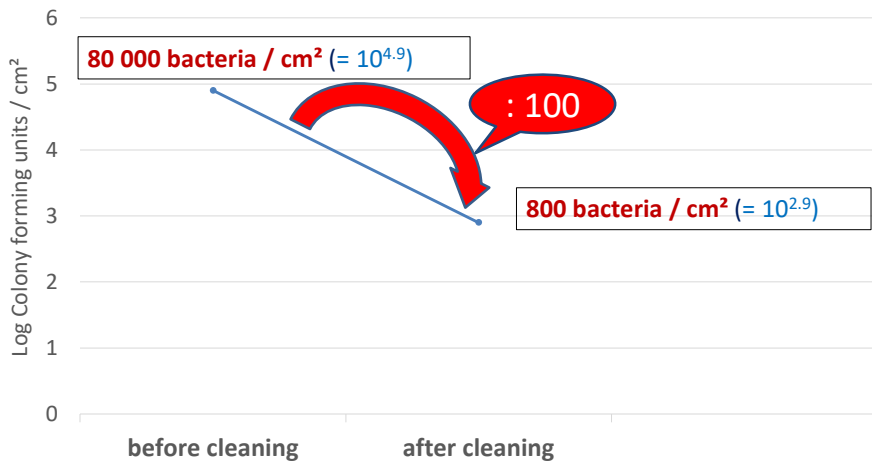
Luyckx et al. 2015

number of bacteria /cm² in poultry stable



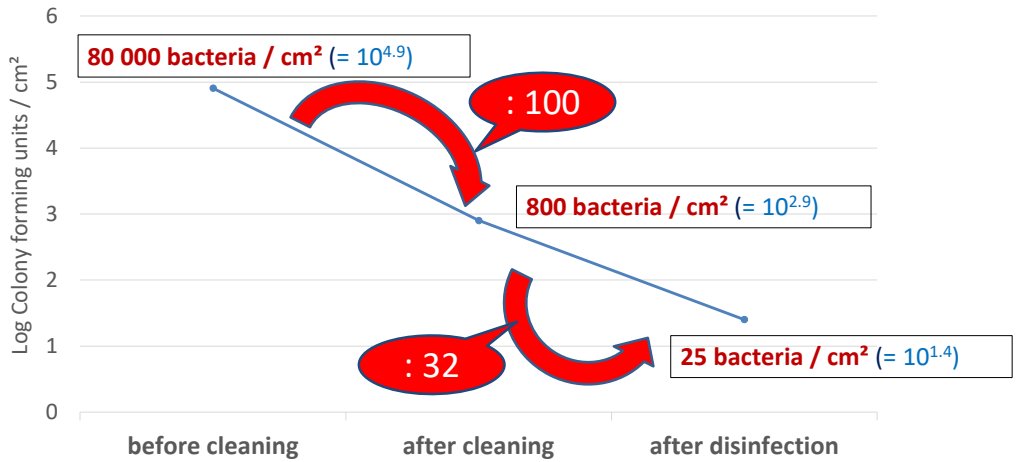
Luyckx et al. 2015

number of bacteria /cm² in poultry stable



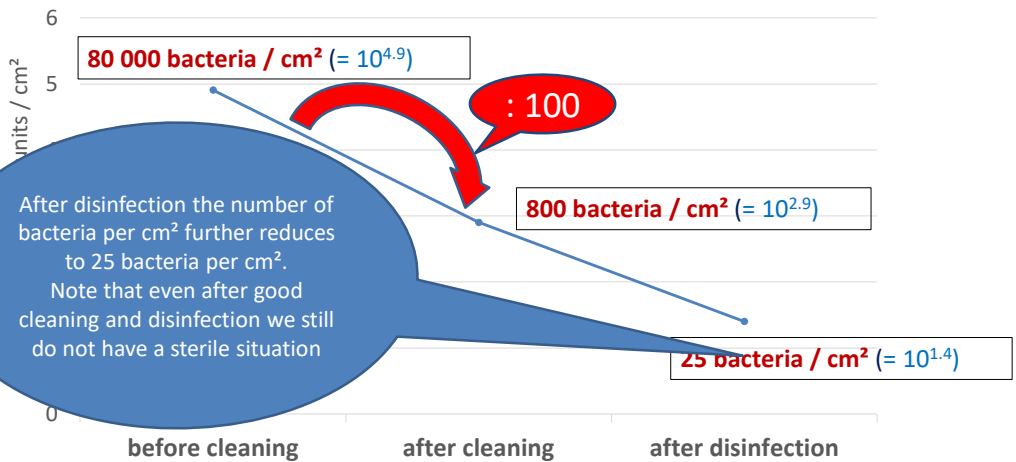
Luyckx et al. 2015

number of bacteria /cm² in poultry stable



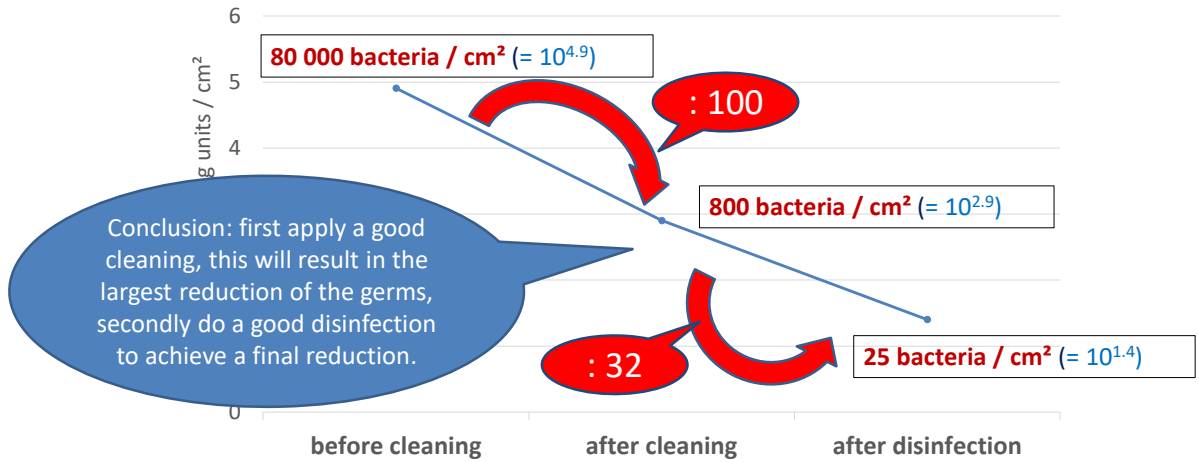
Luyckx et al. 2015

number of bacteria /cm² in poultry stable



Luyckx et al. 2015

number of bacteria /cm² in poultry stable



Luyckx et al. 2015

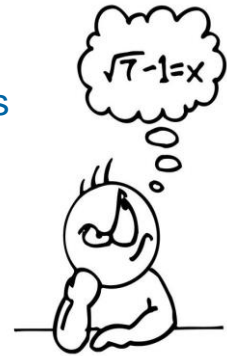
Biocheck.Ugent

Hoe de Biocheck.Ugent-website te gebruiken

Bioveiligheid = divers

- Geen protocol dat op ieder bedrijf van toepassing is

→ Score System



Risicogebaseerd scoresysteem

• Gewogen scores

- Gebaseerd op wetenschappelijk onderzoek
- Gewicht voor iedere subcategorie en iedere vraag
- GRATIS TE GEBRUIKEN

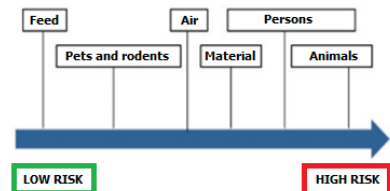


Figure 1: General arrangement of the transmission routes between farms according to their relative importance (adjusted from Boklund, 2008)



BIOCHECK.UGent, prevention is better than cure!

Welkom!

Biocheck.Ugent is a risk-based scoring system to evaluate the quality of your on-farm biosecurity in an scientific and independent way.

Fill in the online questionnaire for free and receive valuable feedback about the biosecurity level of your farm. You get a summarizing and personal report with detailed results. These findings can help you to choose your own suitable biosecurity pathway.

Don't hesitate and get started to lift your farm to a higher biosecurity level!

[Start the Biocheck.Ugent!](#)

[How to use Biocheck.Ugent?](#)

[Please fill in our Biocheck.Ugent survey!](#)



The Biocheck.Ugent was filled in 13427 times around the world to evaluate the on-farm biosecurity level!



9394



3216



817

Biocheck.Ugent considers the data provided by you, after this referred to as your data, as confidential information. Filling in this questionnaire gives implicit permission to the Faculty of Veterinary Medicine of Ghent University to use your data, analyzed anonymously, for scientific cause. All services offered can be used without disclosing personal information (e.g. name and address) by using anonymized data or aliases. Your data will be saved for 10 years and will never be shared without your permission.

This Biocheck.Ugent questionnaire with associated scoring system and the website were developed by the unit for

In the spotlight



07-02-2018

"Biosecurity in animal production and veterinary medicine (from principles to practice)" now available for purchase!



20-11-2018

New presentation available about the Biocheck.Ugent tool!

Agenda



JAN 22-23

Hands on biosecurity training
Merebeke, Belgium

[Home](#) > [Start the Biocheck](#)

Start the Biocheck

Make your choice and click on the questionnaire you would like to fill in. The Biocheck questionnaire is available in different languages. You can choose your language immediately after your start.

In addition, some practical hints to fill in the Biocheck questionnaire in an efficient way:

- If you doubt about the relevance of a particular question or you just want some more explanations about the topic, you can click on 'More information about this question'.
- You can decide to interrupt the questionnaire at any time and keep the provisional answers in order to proceed at a different time. Press the 'resume later' button.
- Don't use the 'previous' and 'next' buttons of your own browser while completing the Biocheck. For this, there are buttons provided at the bottom of the page.
- The asterisk (*) denotes a mandatory field. This answers are needed to calculate your score. All the other questions are optional.
- You can choose to create an account on this website (before or after completing the questionnaire). It gives you the opportunity to save your personal report with results. This could be useful, for example, if you would like to compare the results of your farm over a certain period of time.

If you want more information about the scoring system, please visit [about biocheck](#). Here the scoring system is explained in detail.

Please click on the following link to use the CID UNIV automatic feed-back system: biocheck.cid@ugent.com

Good luck!

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Biocheck Pig

[→ Start!](#)

[Also available in Dutch](#)
[Biocheck \(Duits\)](#)
[Biocheck \(Frans\)](#)
[Biocheck \(Engels\)](#)



Biocheck Poultry

[→ Start!](#)



Biocheck Cattle

[→ Start!](#)



Hoe de Biocheck.Ugent gebruiken

0% 100%

English

A. Personal information

All personal information is strictly optional and is only necessary for further personal usage of the Biocheck.Ugent® or for the backup of previous results. All the information will be stored in an anonymous way and will never be passed to third parties.

1. Name (of the owner)

? This name will be shown in the list of reports

2. Address

3. Zip code

4. City

5. Country
Choose one of the following answers

Please choose...

6. Telephone number

Resume later

Previous Next

alleen "*" verplichte vragen



Hoe de Biocheck.Ugent gebruiken

Biocheck Pig 2.1

0% 100%

English

U. Kind of data

Type of data

Choose one of the following answers

- Completed data are based on a real situation and represent a real herd
- Completed data is an exercise, the data are not necessarily representative for a real herd

? We are aware that this question can be filled in either to calculate the score of a real herd or for educational or exploratory purposes, sometimes with partly or entirely fictitious answers. To use the data collected through this survey for scientific research, it is important we can make a distinction between the real data and the fictitious data.

Resume later

Previous Submit

Exit and clear survey





ID: 201/572376/b/r1_1/F
 Entry date: 2019-06-03 09:47:22
 Identification:

BEEF

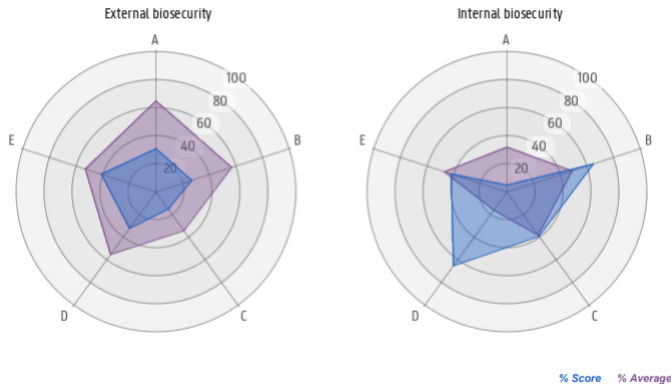
Nr	Description	Score	Country average	Global average
<i>External biosecurity</i>				
A	<u>Purchase and reproduction</u>	31 %	65 %	66 %
B	<u>Transport and carcass removal</u>	27 %	57 %	56 %
C	<u>Feed and water</u>	15 %	34 %	37 %
D	<u>Personnel and visitors</u>	32 %	55 %	55 %
E	<u>Vermin control and other animals</u>	41 %	53 %	54 %
Subtotal External biosecurity:		30 %	57 %	58 %
<i>Internal biosecurity</i>				
A	<u>Health management</u>	5 %	32 %	32 %
B	<u>Calving management</u>	65 %	49 %	47 %
C	<u>Calf management</u>	39 %	38 %	38 %
D	<u>Adult management</u>	65 %	16 %	18 %
E	<u>Working organization and materials</u>	42 %	47 %	46 %
Subtotal Internal biosecurity:		36 %	37 %	37 %
<i>N/A = Not applicable</i>		Total:	33 %	47 %
			47 %	48 %



ID: 201/572376/b/r1_1/F
 Entry date: 2019-06-03 09:47:22
 Identification:

BEEF

These figures show **your results** graphically compared to the **average scores**. The bigger the blue area, the better your result. The letters of the axes correspond to the numbering in the report above.



For more information about biosecurity on a beef cattle farm and how to improve this, you can always look at the extensive information available on the [Biocheck.Ugent website](#) in the sections "about biocheck" and "downloads and links". You can also contact your veterinarian for advice on biosecurity measures on your farm.



[Inhoudsopgave](#)

[Proefhoofdstuk](#)

Biosecurity in animal production and veterinary medicine

From principles to practice

Door [Jeroen Dewulf](#), [Filip Van Immerseel](#)

 Boek

Globally, the way the animal production industry copes with infectious diseases is changing. The (excessive) use of antimicrobials is under debate and it is becoming standard practice to implement thorough biosecurity plans on farms to prevent the entry and spread

65



“An ounce of prevention,
is worth a pound of cure”

- Benjamin Franklin -

Jeroen Dewulf
Bert Damiaans

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