



# PIG PROGRESS

ESPHM | Thessaloniki | Greece | May 31, 2023

Vincent ter Beek, editor, *Pig Progress*

Future trends in **animal** production and meat consumption



**DAIRY GLOBAL**

**PIG PROGRESS**

**ALL ABOUT FEED**

**POULTRY WORLD**

**FUTURE FARMING**



# Contents

1. Introduction
2. 12 Trends – my selection
3. Conclusion



# Introduction

A few words about *Pig Progress*



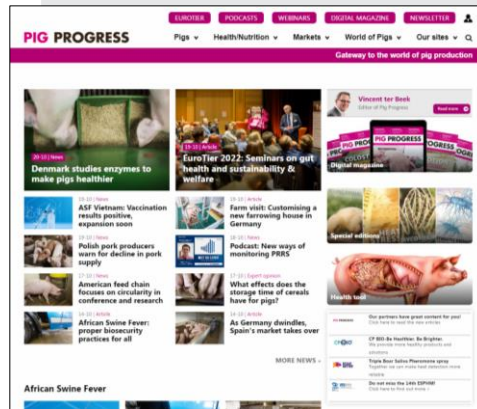
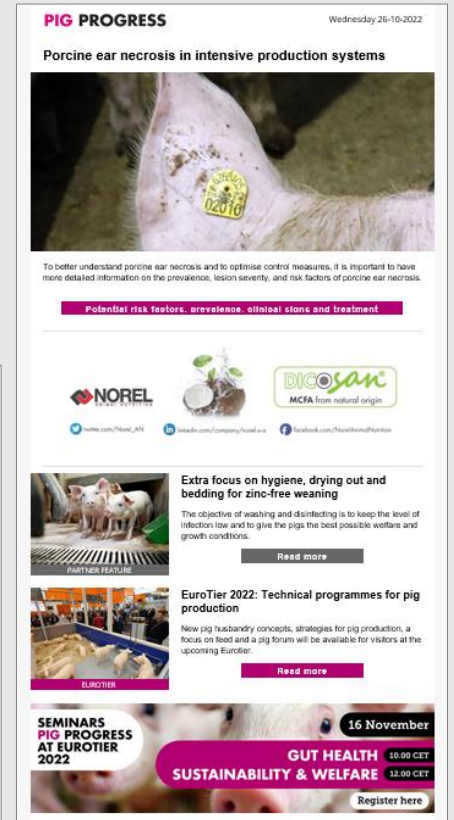
Magazines & Special editions

# PIG PROGRESS

Podcasts



Newsletters

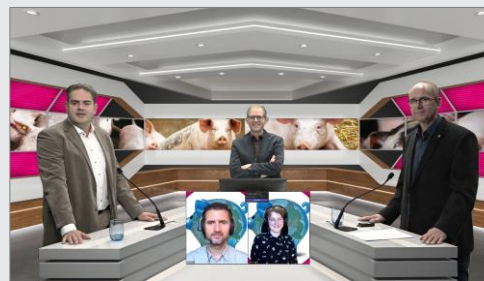


Website

Events



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Social Media





## Sister titles

**DAIRY GLOBAL**  
**ALL ABOUT FEED**  
**PIG PROGRESS**  
**POULTRY WORLD**  
**FUTURE FARMING**

**MISSET**  
**MISSET**



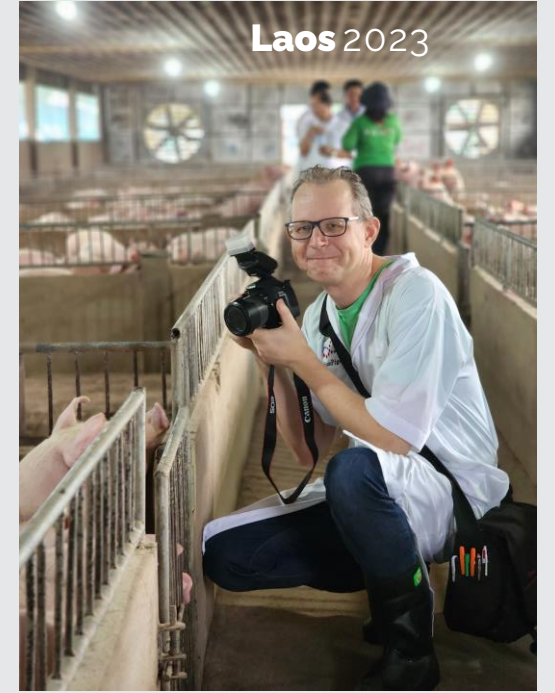
## Introduction

- 46 years old
- History & Journalism (Netherlands)
- Postgraduate Newspaper Journalism (UK)
- College teacher (2002-2003)
- Local journalism (2000-2005)
  - *De Twentsche Courant Tubantia*
  - *Provinciale Zeeuwse Courant*
- Trade journalism (2005-2023)
  - *Pig Progress*





# Farm visits





## Introduction – Trends

- A trend is a form of **collective behaviour** in which a group of people enthusiastically follow an impulse for a short period.  
*[Wikipedia]*
- **12 Trends** in swine production
- **My** selection of trends – not *the* selection of trends
- **Why** do I think this is something to watch?
- This is not a Top-12 – they are just **alphabetically** ordered





# Introduction – Trends

1. Anticipating climate change
2. Applying precision technology
- 3. Building multistorey**
- 4. Enhancing biosecurity**
5. Going organic
- 6. Keeping tails and testicles**
- 7. Lowering emissions**
8. Producing antibiotic-free (and no ZnO)
- 9. Providing space to sows**
10. Replacing meat
11. Searching soy alternatives
- 12. Using social media**

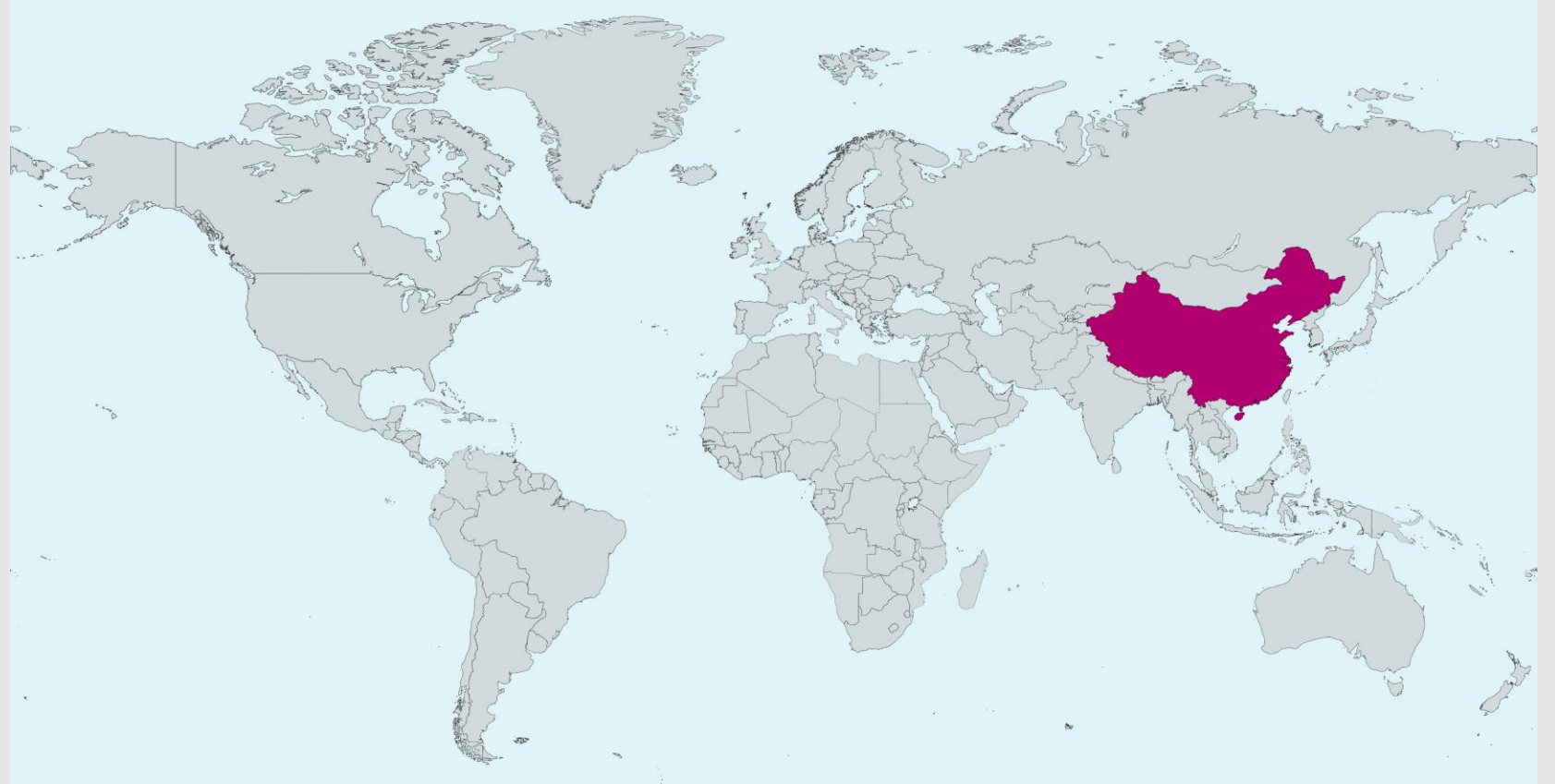


# **B**uilding multistorey



# Building multistorey

*If pigs can be kept more efficiently when kept on different floors, then what is stopping us?*



# Building multistorey

- Glauzig, Saxony-Anhalt, Germany (1969) → **500 sows**
- Yangxiang, Guigang, Guangxi province, China (2018) → **51,000 sows** on 9 floors
- Muyuan, Neixiang, Henan province, China (2020) → **84,000 sows** on 6 floors
- Zhongxin Kaiwei, Ezhou, Hubei province, China (2022) → **48,000 sows** on 26 floors





## Building multistorey

Number of floors	Percentage of buildings
2 floors	48%
3-4 floors	29%
5-7 floors	22%
8 floors	1.5%
9-15 floors	0.4%
26 floors	0.1%

Source: Dr E. Wayne Johnson/Chinese data 2020/2021

Integrator	# Complexes	Tallest
Wens Group	7	9 floors
New Hope Liuhe	4	9 floors
Tianzhao Zhuye	4	7 floors
Yangxiang	3	17 floors
Jingjizhinong	3	9 floors
Tangrenshen	3	7 floors
Muyuan	3	6 floors
Aonong	2	8 floors
Luoniushan	2	4 floors

Source: Yangzhu 360.com

# Building multistorey

- Where the **population density** is highest
- In other words: where land is **scarce**
- < 1 million sows in **actual** high-rise production
- About 2.5% of pigs in China **born** in high-rise buildings
- **Largest** investment: Muyuan: 5 billion RMB (€660 million)



# Building multistorey

- Pig production is a lucrative business
- Area is scarce and expensive
- Animal health (theory)
- Breeding efficiency
- (Labour) efficiency

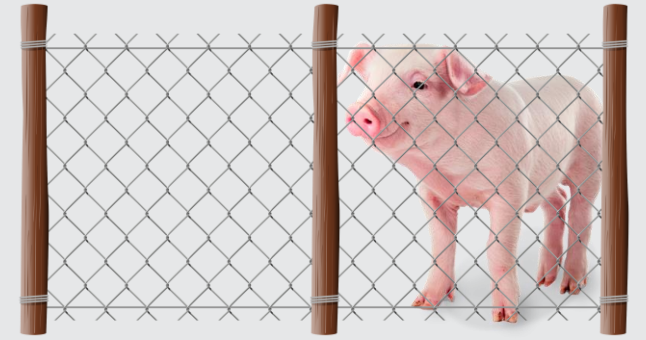


- High building costs
- Internal biosecurity
- Societal pressure
- High costs for disease prevention
- Manure management (piping)
- Getting (environmental) permission is tough
- Water pressure dropping
- Logistics (AIAO) within the pig house
- Occurrence of new health problems?





# Enhancing biosecurity

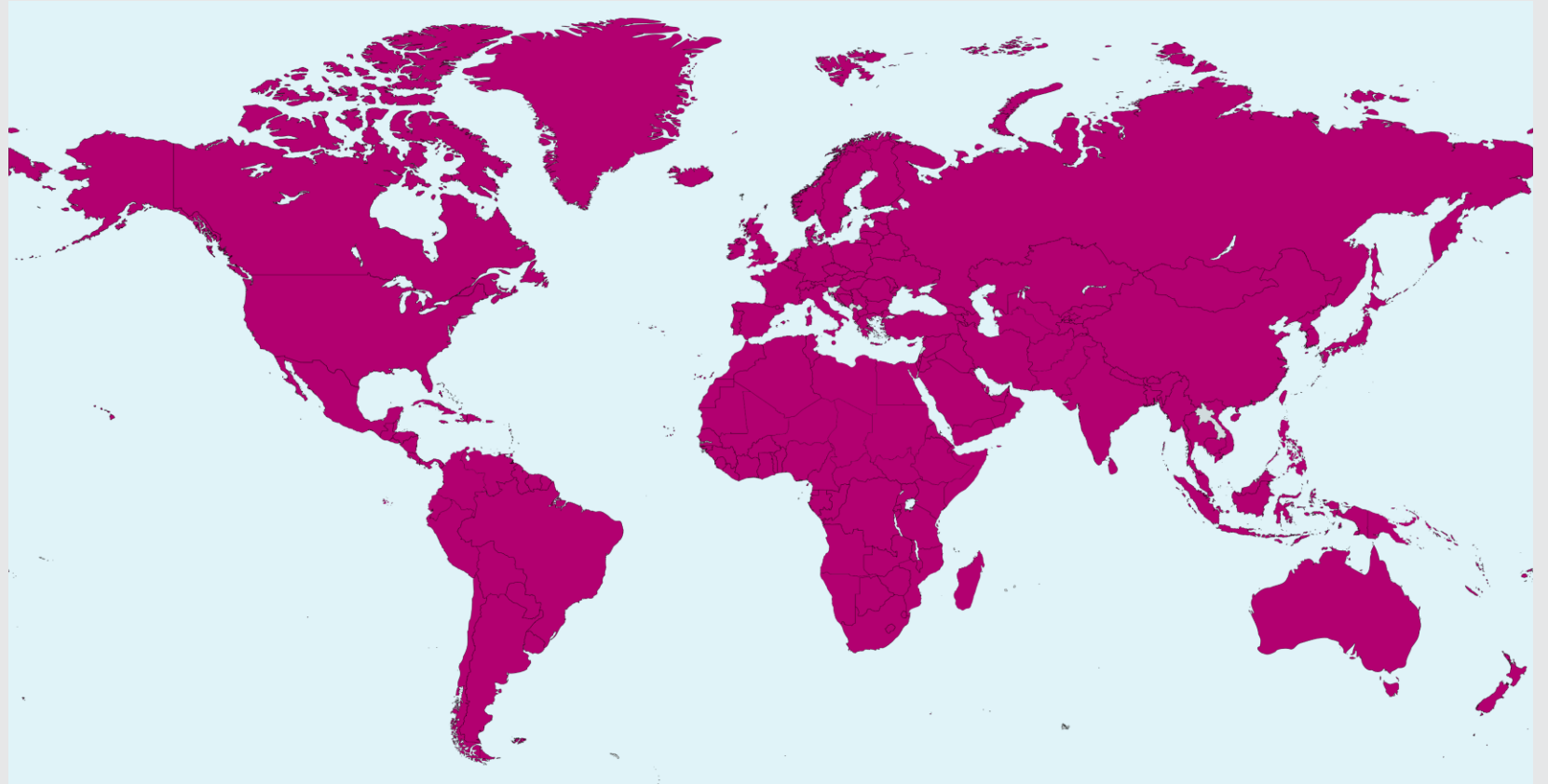






## Enhancing biosecurity

*Biosecurity is a matter of mindset*



# Enhancing biosecurity

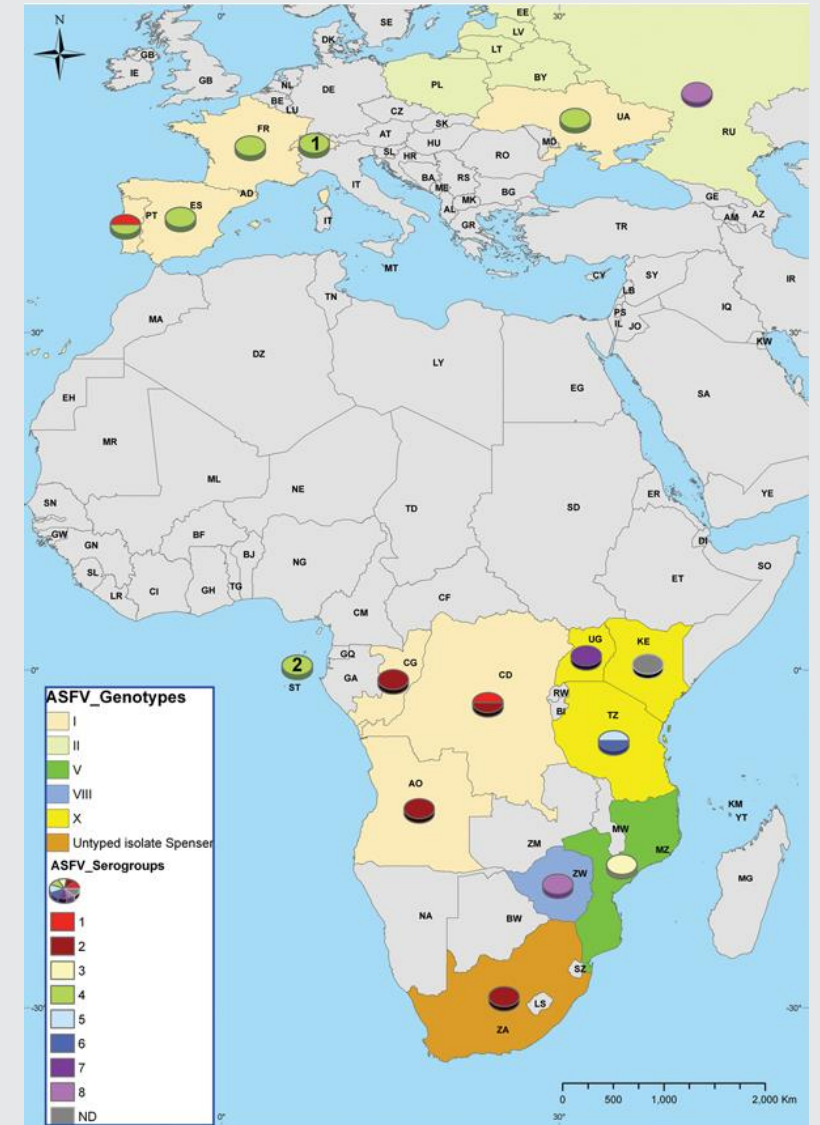
African Swine Fever virus is **not gone** yet

- Many countries have issues to aim for **transparency** and **cooperation**
- There are many “**unknowns**” about the whereabouts
  - ASF virus is also in wild boar in Asia (e.g. South Korea, rare reports from China)
  - Dead infected pigs washed ashore in Taiwan
- Various other genotypes in Africa, to date: **24**.



Source: COA, pig at coast near Taipei, April 2021.

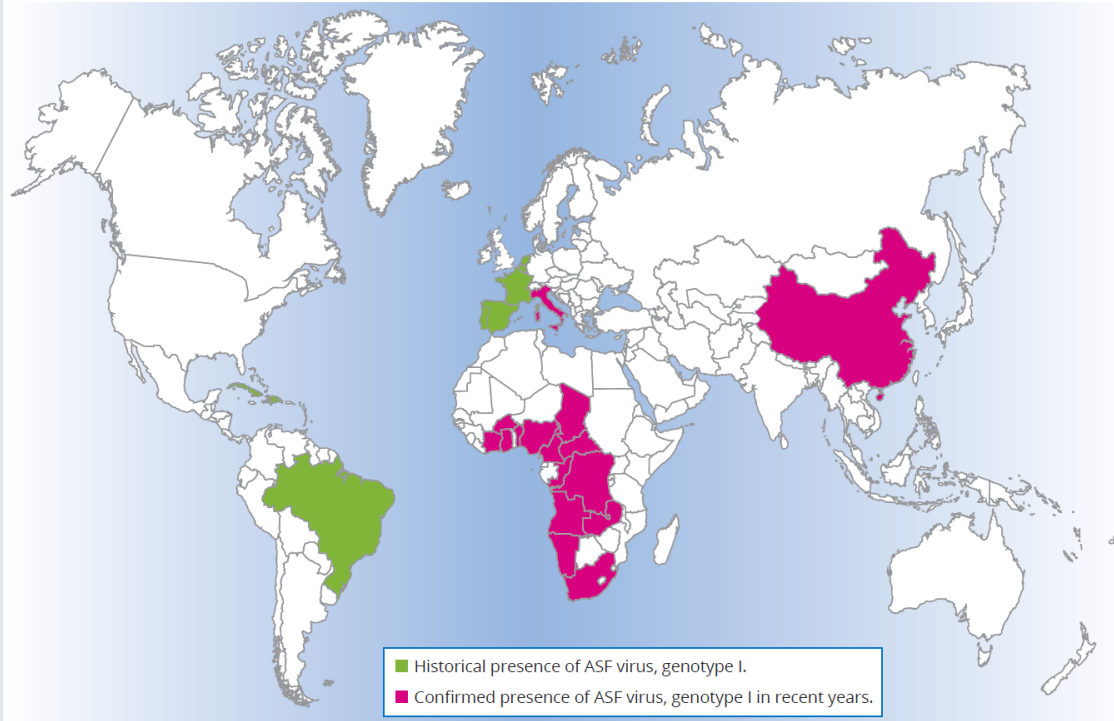
Source: Magolovkin, e.a., *Emerging Infectious Diseases*, February 2015





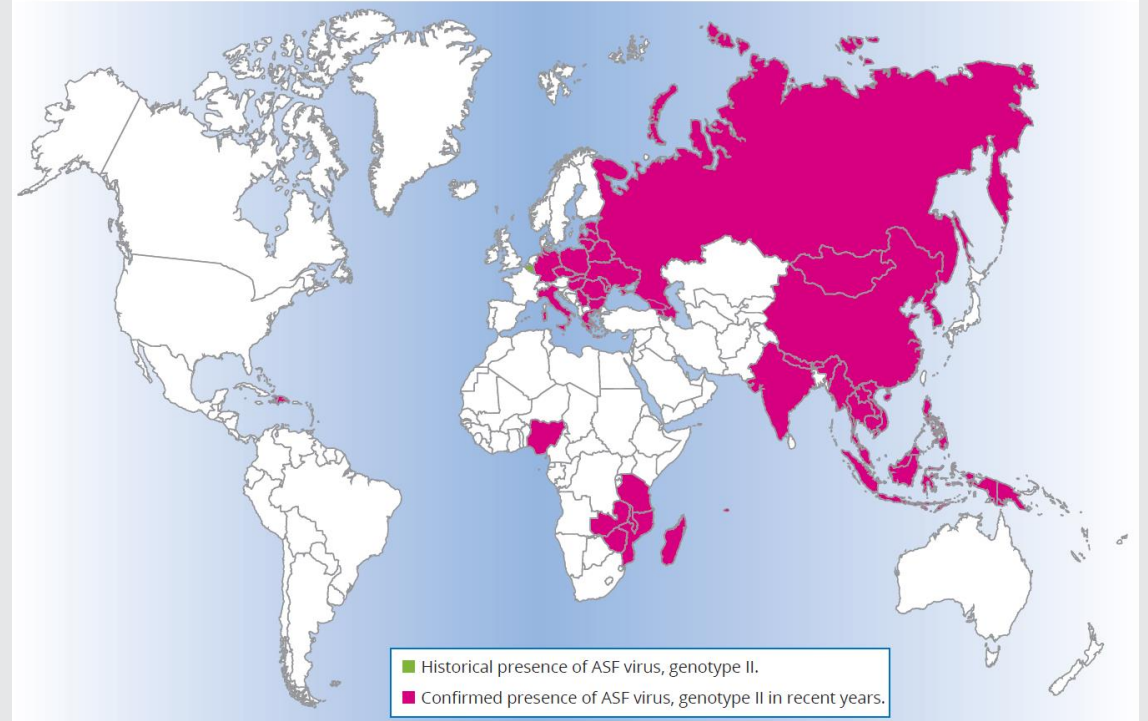
# Enhancing biosecurity

Figure 1 – Historical and contemporary confirmed occurrence of ASF virus, genotype I.



Source: *Pig Progress*, 39.03 (2023)

Figure 2 – Historical and contemporary confirmed occurrence of ASF virus, genotype II.



# Enhancing biosecurity

- **Nationwide** biosecurity
  - Fences in Denmark
  - Checks at border
- **External** biosecurity
  - Proper fencing
  - Decent air filtration
  - Isolated location
- **Internal** biosecurity
  - HyCare
    - Coated walls
    - Fly reduction
    - Water treatment
    - Say no to rodents

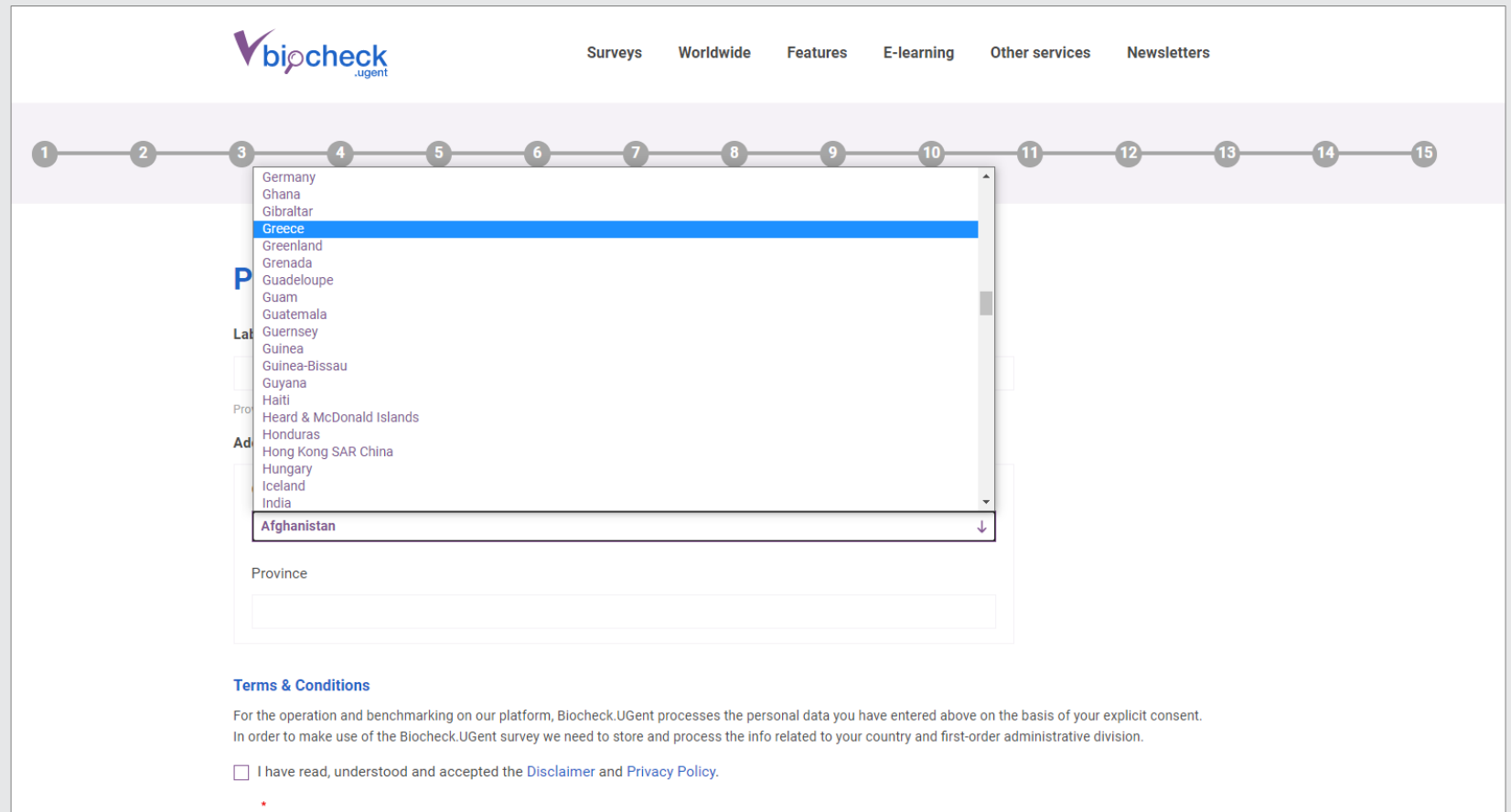
*“Biosecurity  
is a matter  
of mindset”*

*Vincentius in Annis  
(2023 AD)*



# Enhancing biosecurity

- BioCheck (University of Ghent, Belgium)  
[biocheckgent.com](http://biocheckgent.com)
- Focus on internal and external biosecurity
- Available in 11 languages



The screenshot displays the BioCheck website interface. At the top, the logo "biocheck .ugent" is visible, along with navigation links for "Surveys", "Worldwide", "Features", "E-learning", "Other services", and "Newsletters". A progress bar with 15 numbered steps is shown, with step 3 currently active. A dropdown menu is open, listing countries from Germany to Afghanistan. The "Greece" option is highlighted in blue. Below the dropdown is a "Province" input field. At the bottom, there is a "Terms & Conditions" section with a consent checkbox and a red asterisk indicating a required field.

**biocheck .ugent**

Surveys Worldwide Features E-learning Other services Newsletters

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Germany  
Ghana  
Gibraltar  
Greece  
Greenland  
Grenada  
Guadeloupe  
Guam  
Guatemala  
Guernsey  
Guinea  
Guinea-Bissau  
Guyana  
Haiti  
Heard & McDonald Islands  
Honduras  
Hong Kong SAR China  
Hungary  
Iceland  
India  
Afghanistan

Province

**Terms & Conditions**

For the operation and benchmarking on our platform, Biocheck.Ugent processes the personal data you have entered above on the basis of your explicit consent. In order to make use of the Biocheck.Ugent survey we need to store and process the info related to your country and first-order administrative division.

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\*



# **K**eeping tails & testicles





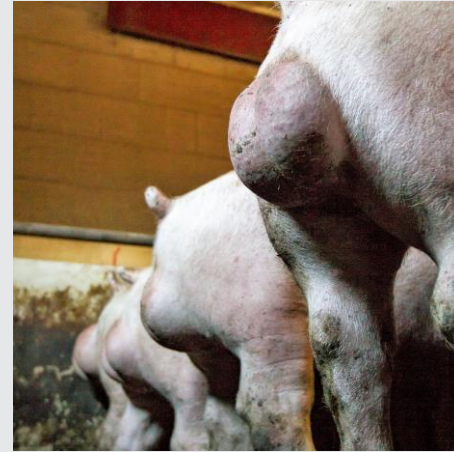
## Question...

In how many countries, the majority of pig producers do not castrate and do not dock tails?

- 10
- 5
- 3
- 1
- 0

## Keeping tails & testicles

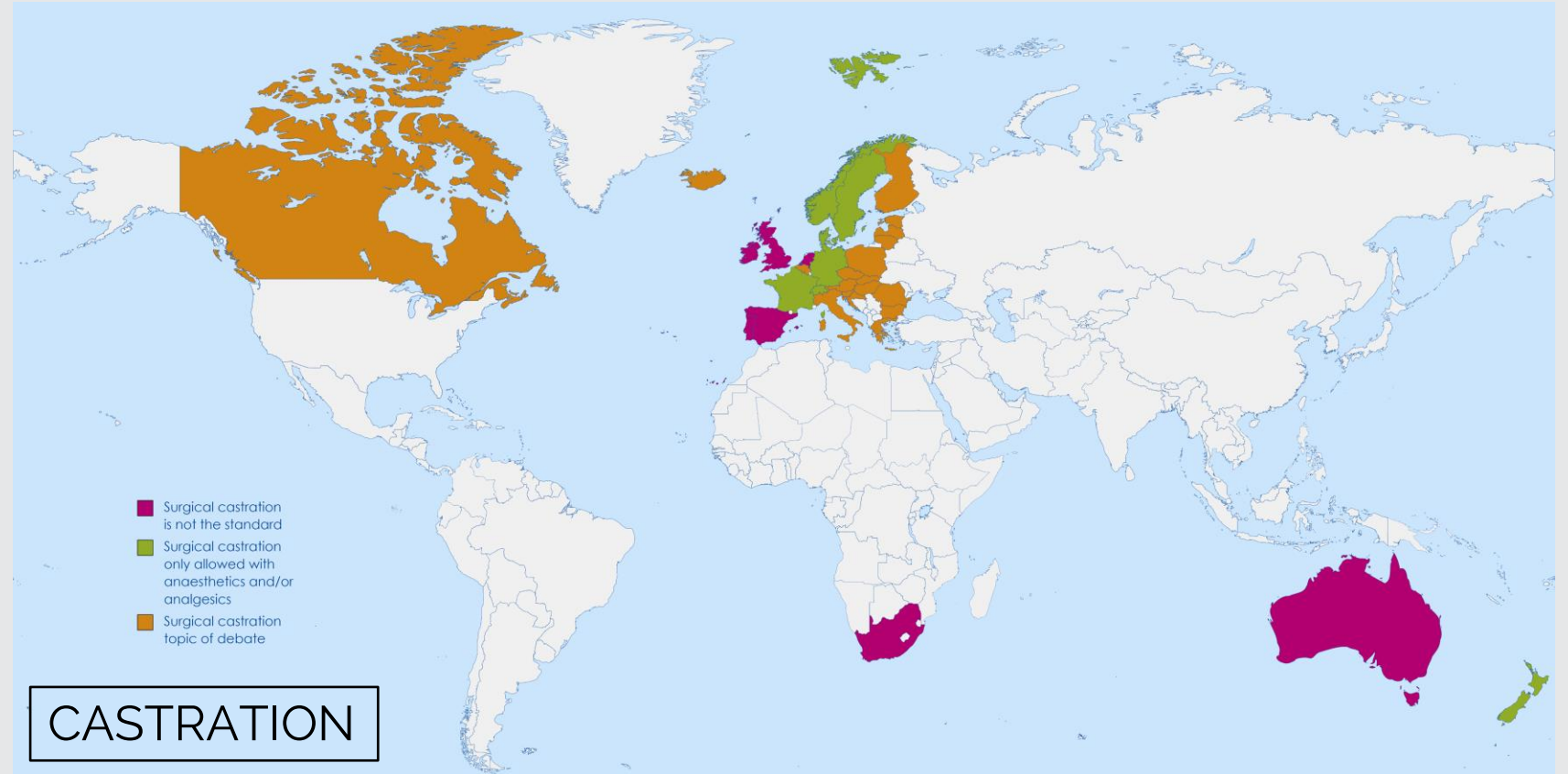
*Is it desirable to “adjust” animals to production systems – or does this say something about the systems?*





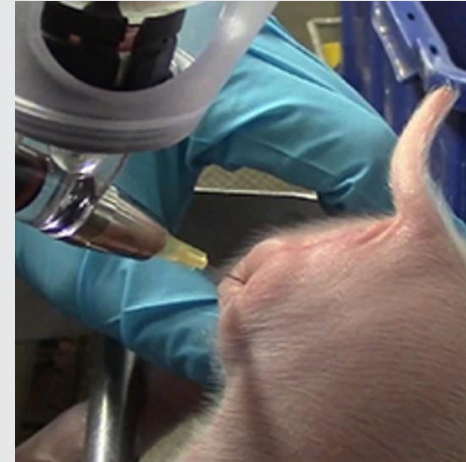
# Keeping tails & testicles

- Some countries never had the castration **tradition**
- Others introduced new **practices**
- Colours show most **common practice** – there may be local exceptions
- Doesn't show **who** is performing or **age** limitations
- This shows attitude towards surgical castration – no inclusion of **immunocastration**



# Keeping tails & testicles

- Anaesthetics
  - Local: Lidocaine
  - Total: Isoflurane
- Analgesics
- Immunocastration (also for females)
- Genetic/genomic selection
- Gene editing
- Nutrition (e.g. inulin/linseed/chicory)
- Welfare (reduction of stress levels)
- Human nose at the slaughterline
- Castration-free pork label (Delhaize)

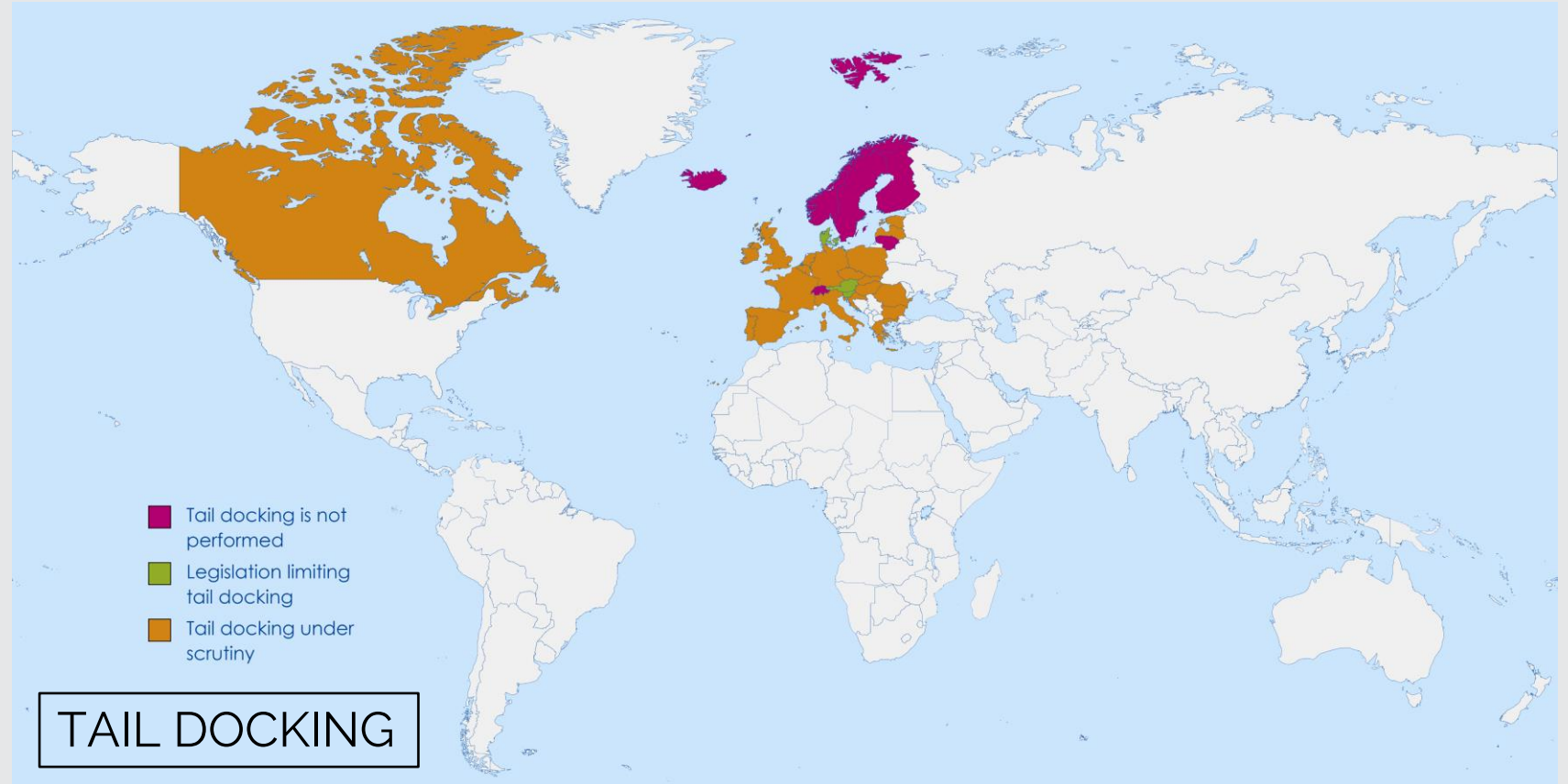


CASTRATION



# Keeping tails & testicles

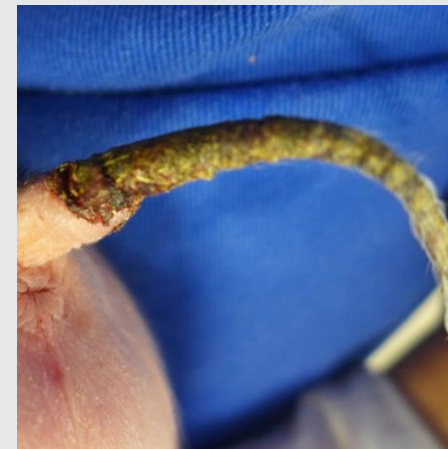
- In the EU routine tail docking is formally forbidden, but there are many **exceptions**
- Three EU countries **banned** it
- In some other countries there's ongoing **debate, research** or **voluntary codes**



# Keeping tails & testicles

- Climate
- Feeding
  - Amino acids, fibres
  - Trace elements, vitamins
- Lighting
- Stocking density
- Straw beddings
- Enrichment materials
- Necrosis (SINS)
- Gut health (e.g. ileitis)
- Tail posture

TAIL DOCKING





## Question...

In how many countries, the majority of pig producers do not castrate and do not dock tails?

- 10
- 5
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- 0

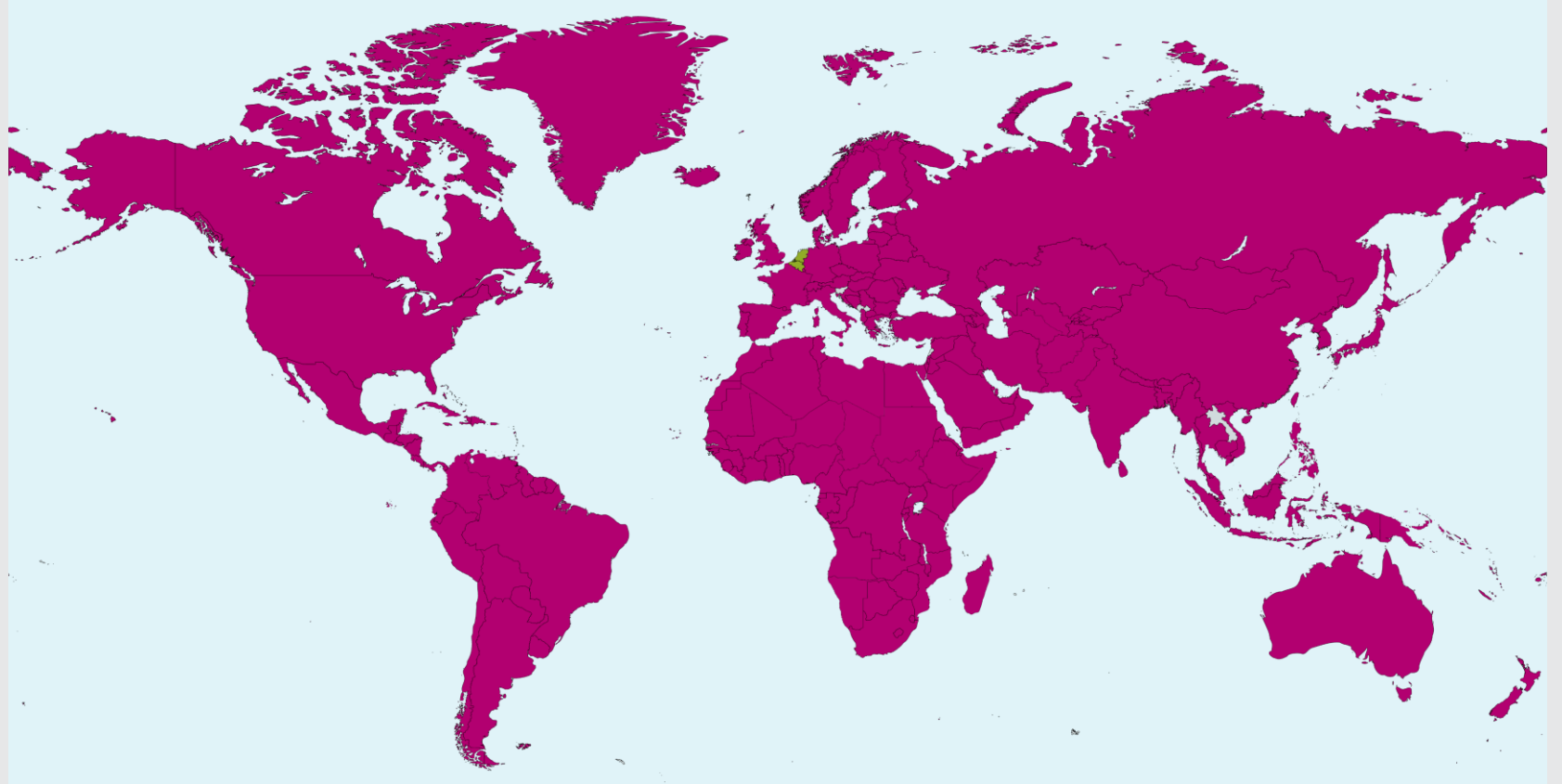


# Lowering emissions



## Lowering emissions

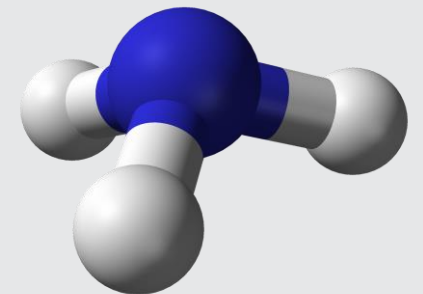
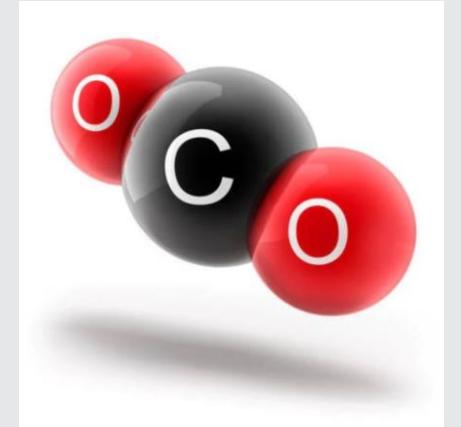
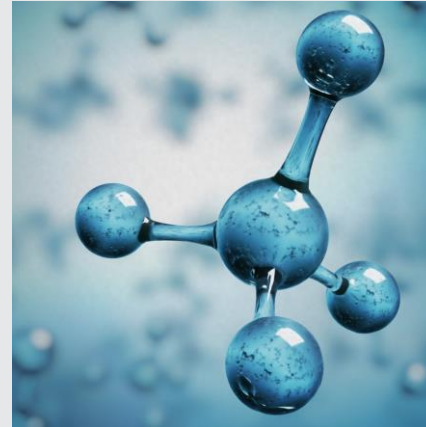
*Producing pigs does not only lead to meat, it also leads to manure and emissions. That part ought to get our full attention too.*



# Lowering emissions

In some countries not a problem – in others they are considered problematic.

- Methane (**CH<sub>4</sub>**)
- Carbon dioxide (**CO<sub>2</sub>**)
- Microscopic particles
- Ammonia (**NH<sub>3</sub>**)





## Lowering emissions – nitrogen deposition

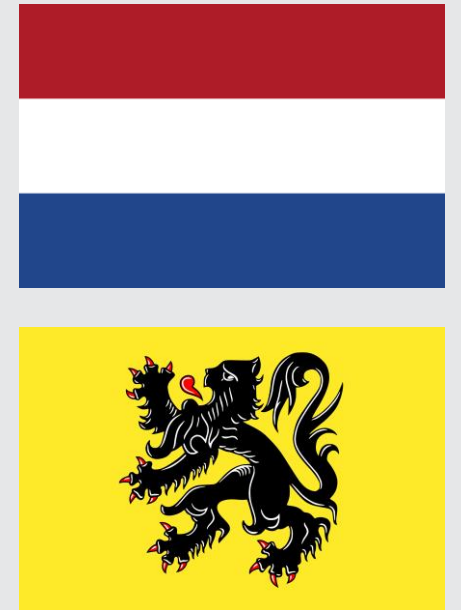
- Oct 1, 2019
- Oct 14, 2019
- Oct 16, 2019
- Oct 25, 2019
- Dec 18, 2019
- Feb 19, 2020



# Lowering emissions – nitrogen deposition

- Developments in **Netherlands** and **Flanders** (northern part of Belgium)
- **Nitrogen** deposition (ammonia, engines)
  - Some plants do well, others don't
  - Biodiversity issue
- **Natura 2000** areas in EU programme
- For years: approach allowed industry to continue
- 2019: **Council of State** - approach contrary to EU law
  - Acute problem for agriculture (46%)
  - 100 km/h on motorways;
  - Construction projects halted
  - Growing calls for “halving the livestock industry”

**PARALYSIS**





## Lowering emissions – nitrogen deposition

Should an emission debate like this worry the rest of Europe?

Don't worry – this is self-inflicted

- Too strict **models** used for measuring nitrogen deposition
- Too many **small areas** submitted to Natura 2000 scheme
- These countries are too small to reach a reasonable **average**

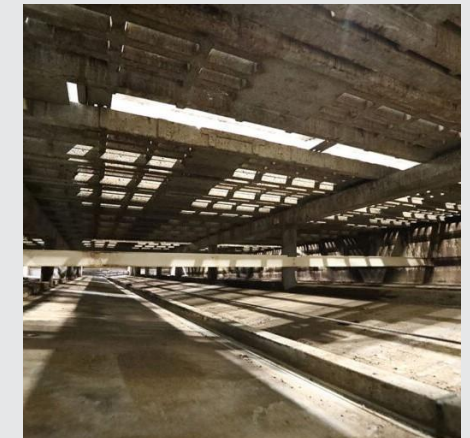
There are lessons to be learnt!

- Too much **ammonia** will affect its surroundings everywhere
- **High courts** could overturn existing legislation elsewhere too
- Lowering ammonia levels will benefit **indoor climate** for pigs



# Lowering emissions – solutions

- **Air** scrubbers
- Precision **feed** formulation
  - Low in crude protein (31% reduction in  $\text{NH}_3$ , WUR, 2022)
  - Low in phosphates
- **Climate** measures
- Use of manure for **biogas** production
  - Consists of  $\text{CH}_4$  and  $\text{CO}_2$
- **Manure** separation & processing (e.g. Trac by Cooperl)
  - Direct separation at the source
  - Relatively clean air in the pig house
  - $\text{NH}_3$  and  $\text{CH}_4$  levels lower





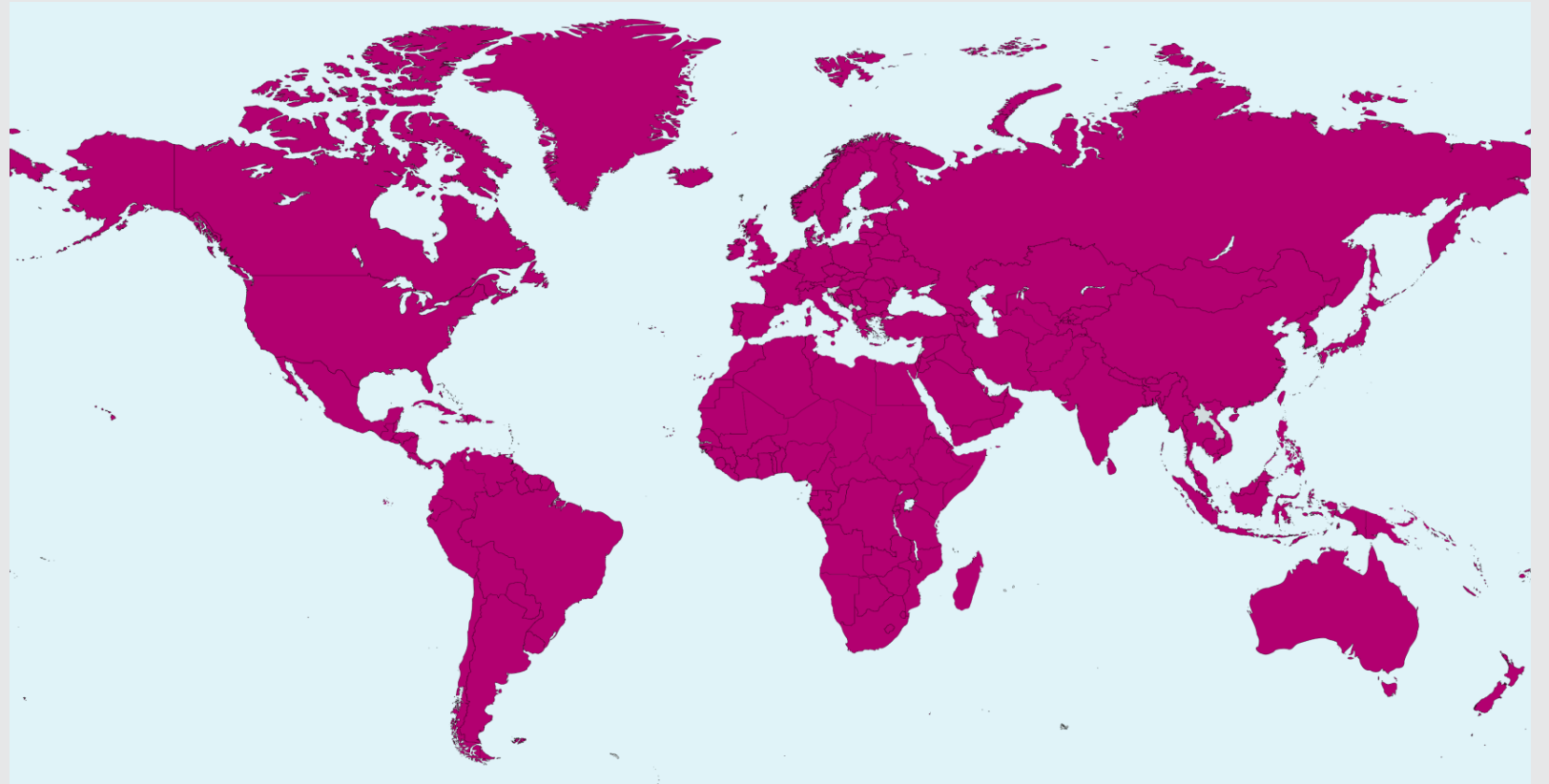
# **P**roviding space to sows





## Providing space to sows

*“So the mother pig cannot move around for an entire month?”*



# Providing space to sows

## '2013' coming too quick for many French producers

30-11-2011 | Updated on 13:47 | Home | Article



1-Tek's free access stall on display at SPACE 2011.

*Deux mille treize* – two thousand and thirteen. This was probably the most frequently used number at SPACE this year. The annual French livestock show in Rennes, France (13-16 September), took the opportunity to zoom in on the urgency to switch to sow group housing, as the deadline of 2013 is approaching.

## 2013 approaches: What are the alternatives?

16-05-2012 | Updated on 14:25 | Home | Article



© Fotopenburo Bert Jansen TEL: +31(0)40-2920292 Ouderwerp: Beers Gerbert Oosterlaken 205209 Datum: 22-01-2015 Categorie: @2@ Trefwoorden: reed jan205209

One more year and then all sows in the European Union ought to be housed in groups for most of their gestation phases. The transition to group housing systems is going differently in every European country. For those in doubt and for those interested: here's a recap of cause and effect, pros and cons, do's and don'ts.

## CPF also switches to group housing for sows

03-05-2018 | Pigs | Sows & Boars | News



Group housing for sows in one of CPF's sow farms. Photo: Charoen Pokphand Foods

Thailand's largest swine producer Charoen Pokphand Foods (CPF) has confirmed that it will convert all new farms to group housing for gestating sows in the years to come.

## Qinglian Food, China's pioneer for sow group housing

27-02-2018 | Pigs | Sows & Boars | Article



Qinglian Food, a Chinese pork producer, announced last year to phase out sow stalls. What made the company choose to do so?

## Smithfield recommends group housing for pregnant sows

08-01-2014 | Updated on 13:25 | Pigs | Sows & Boars | News



Smithfield Foods, and its hog production subsidiary, Murphy-Brown, is recommending all of its contract sow growers join with the company in converting their facilities to group housing systems for pregnant sows.

## New gestation crate commitment from ConAgra Brands

14-04 | Sows & Boars | News



Conagra states that "our efforts are focused on trim and fresh pork directly sourced." Foto: Peter Roek.

Conagra Brands will source all of its pork from farms where gestating sows are kept in open pen housing systems, starting in May 2026. This means that after a maximum of 6 weeks staying in gestation crates, gestating sows go to group pens.

# GESTATION CRATES

## Brazil's JBS to phase out gestation stalls

12-06-2015 | Pigs | Sows & Boars | News



Six months after BRF, Brazil's largest pork producer, said it will phase out gestation crates, Seara, Brazil's second largest pork producer owned by JBS, announced it will be gestation stall free by next year.

## US Supreme Court upholds Proposition 12

12-05 | Market trends/analysis | News



Prop 12 outlines standards for confinement systems for sows, poultry and veal calves in California. Each breeding sow must have 2.23 m<sup>2</sup> (24 ft<sup>2</sup>) of space and gestation crates are not permissible. Photo: Vincent ter Beek.

The US Supreme Court upheld the legality of the controversial Proposition 12, an animal welfare law passed in California in 2018. The US pork industry has strongly opposed Prop 12 for years.

## Providing space to sows

- Gestation crate free production a **worldwide** trend
- “2013” legislation in the EU brought about **innovations**
  - Electronic Sow Feeding
  - Free access stalls
  - Mixed set-up (Gestal; stanchions)
- Sows **better prepared** for farrowing
- More **data** available per sow → precision feeding
- Better understanding of **fighting/hierarchy/stress**
- Technical performance can be equalled – if not be **improved**

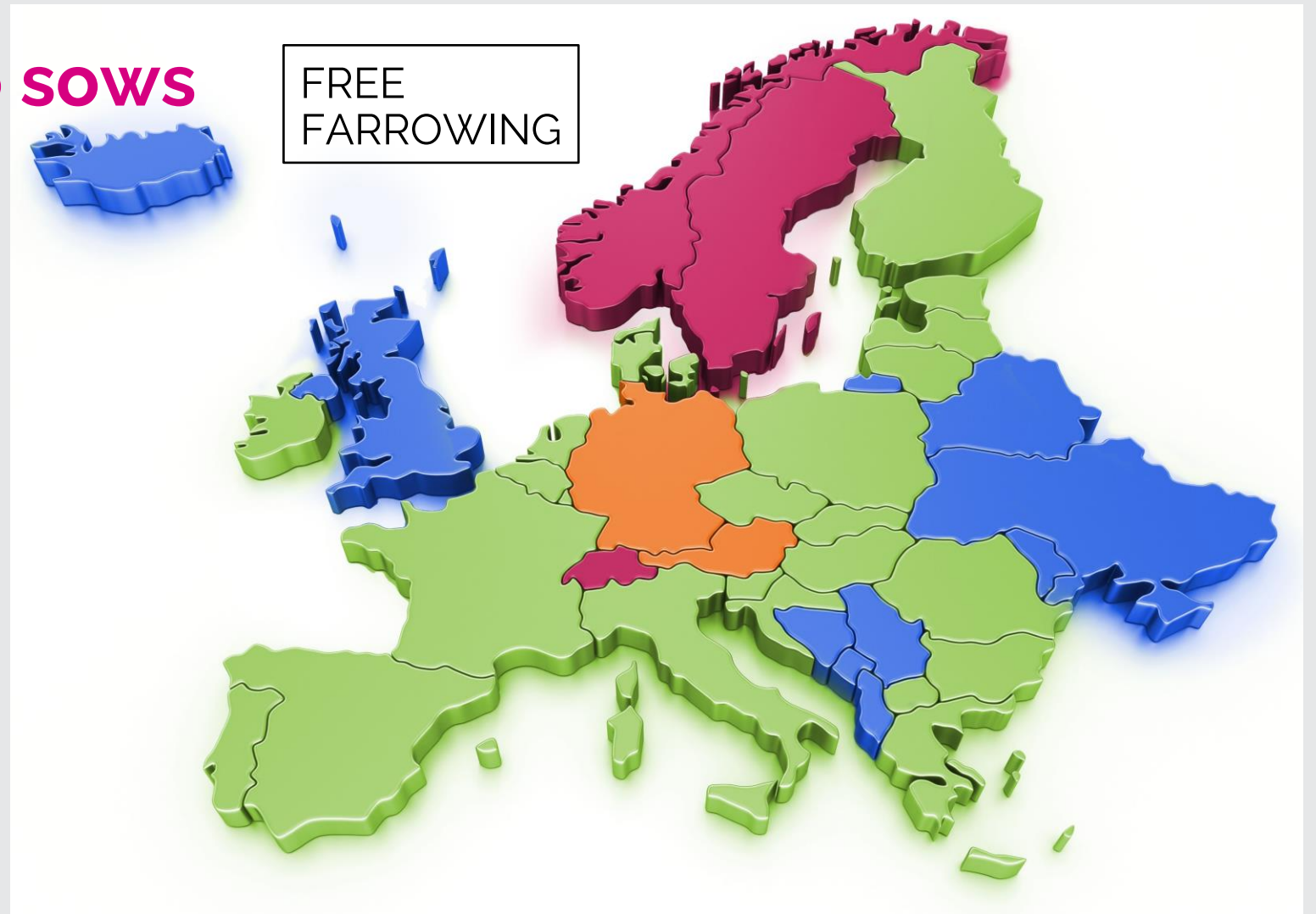


# Providing space to sows

- **Resolution** to end cage system to be put forward in European Parliament by late 2023
- Also **New Zealand** would be orange

- Non-EU countries
- Free farrowing mandatory
- Free farrowing to become mandatory
- EU countries (free farrowing legislation in progress)

*Pig Progress 38.01 (2022)*



# Providing space to sows

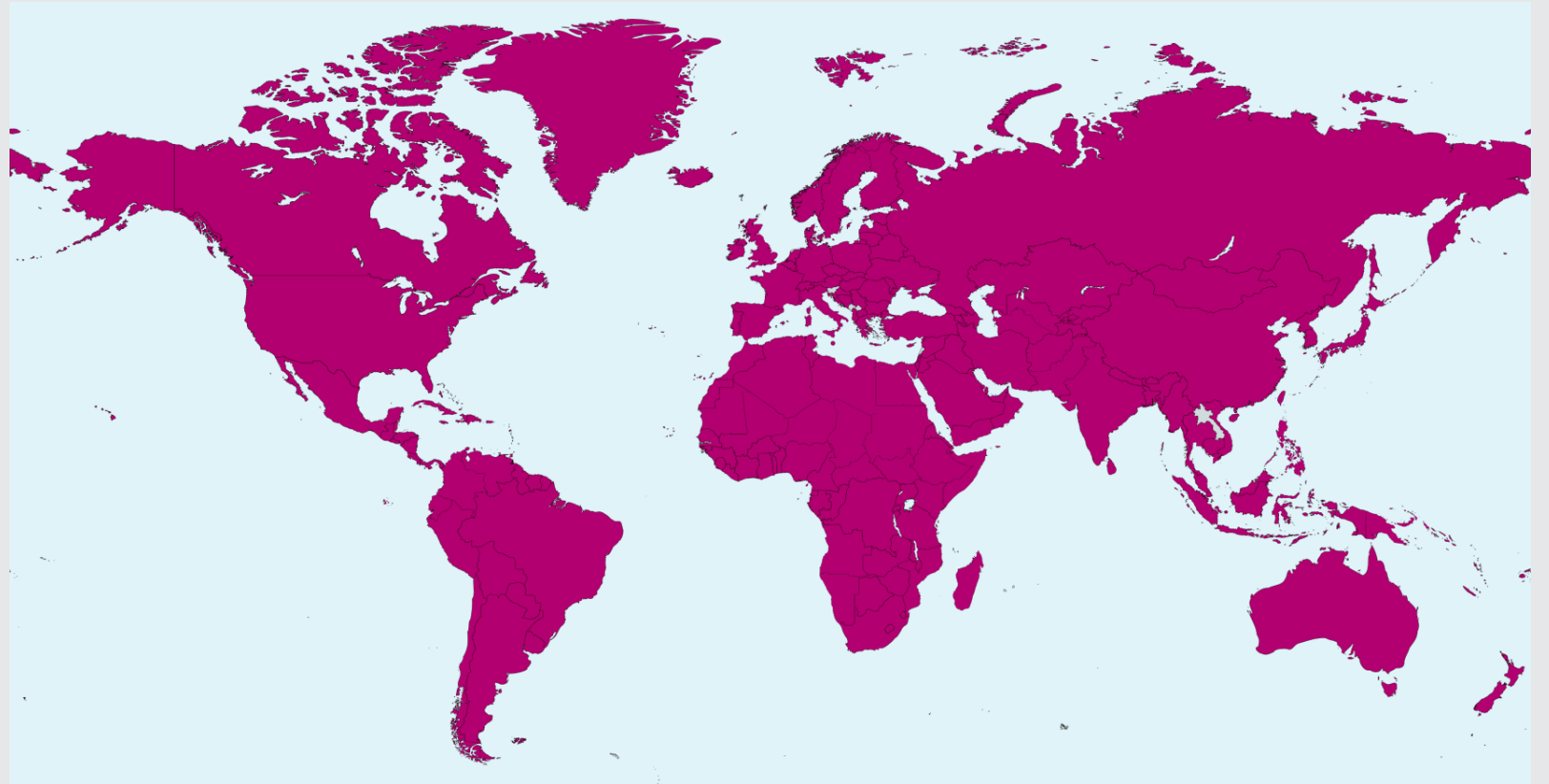
- Significant **trials** in Denmark (10 free farrowing pens on trial) - SEGES
- Webinar late 2021: **Disadvantages** when converting:
  - Significant investments (larger pens)
  - Increased neonatal mortality
  - Limited experience with hyperprolific sows
- **Temporary confinement** systems (4 days)
- Climate influences **dunging** behaviour
- Allow **piglets** to roam around?
- **Straw** or no straw?
- **Subsidies** necessary to help producers convert



# Using social media

## Using social media

*What's keeping producers from showing their pride in their work?*



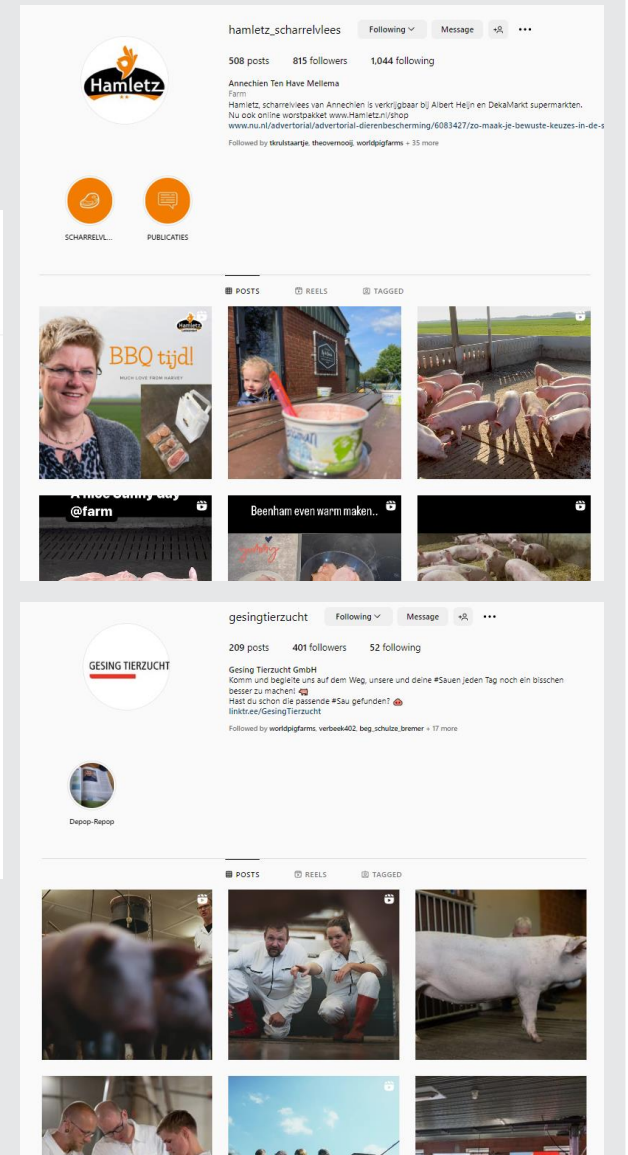
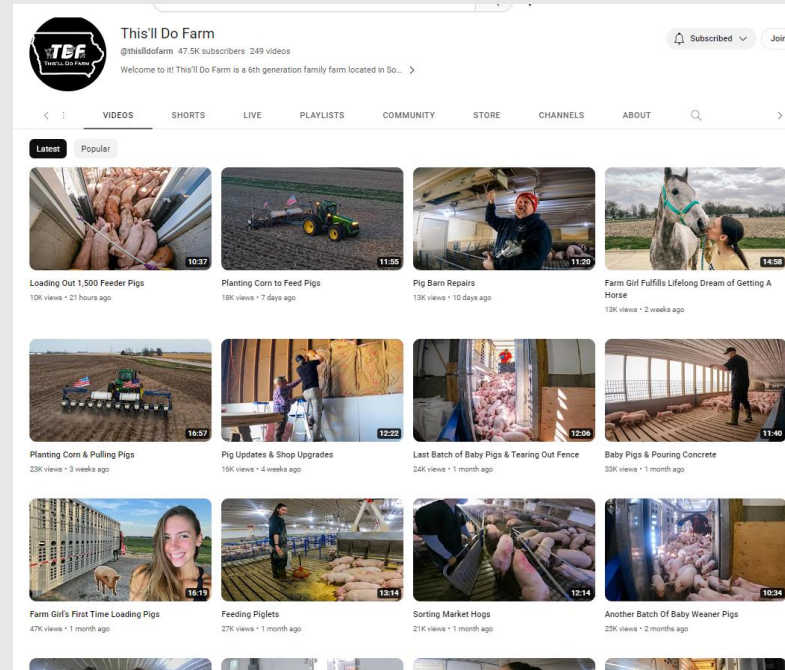
# Using social media

- May 13, **2019**
- 200 **welfarists** entering a pig farm in Boxtel, the Netherlands
- *"There is no excuse for animal abuse"*
- Posting pictures on **social media**
- Difficulty to discern what is **true**
- Need for **authenticity** and **transparency**



# Using social media

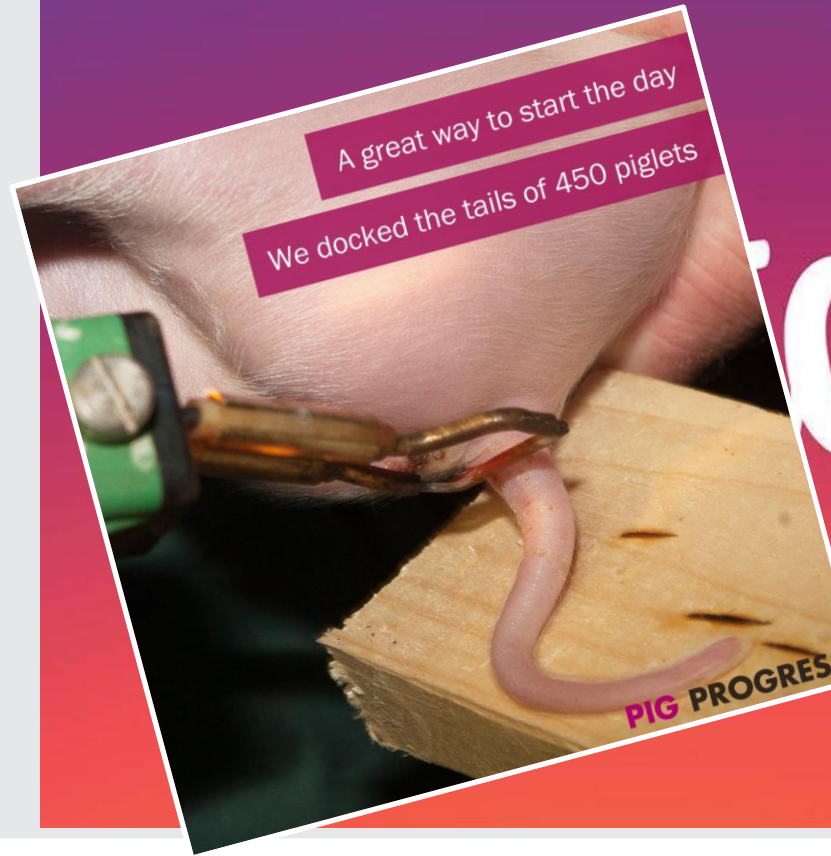
- **Hamletz** (Netherlands)
  - Instagram
  - 815 followers
- **Gesing Tierzucht** (Germany)
  - Instagram
  - 401 followers
- **This'll do farm** (USA)
  - YouTube
  - 47,500 subscribers



## Using social media



*So the mother pig cannot move around for an entire month?*



A great way to start the day  
We docked the tails of 450 piglets

**PIG PROGRESS**



It's that time of the week again!

Time to "process" our male newcomers

**PIG PROGRESS**



A sow with a healthy litter  
taking a rest at a farm in the Netherlands

**PIG PROGRESS**





## Pig production of the future

- 2050 → **9.2 billion** people
- **Where** will these people live?
- Understanding of agriculture will **come down**
- Pork production will come to **embrace** welfare



**Licence to  
produce**





# **e**onclusion



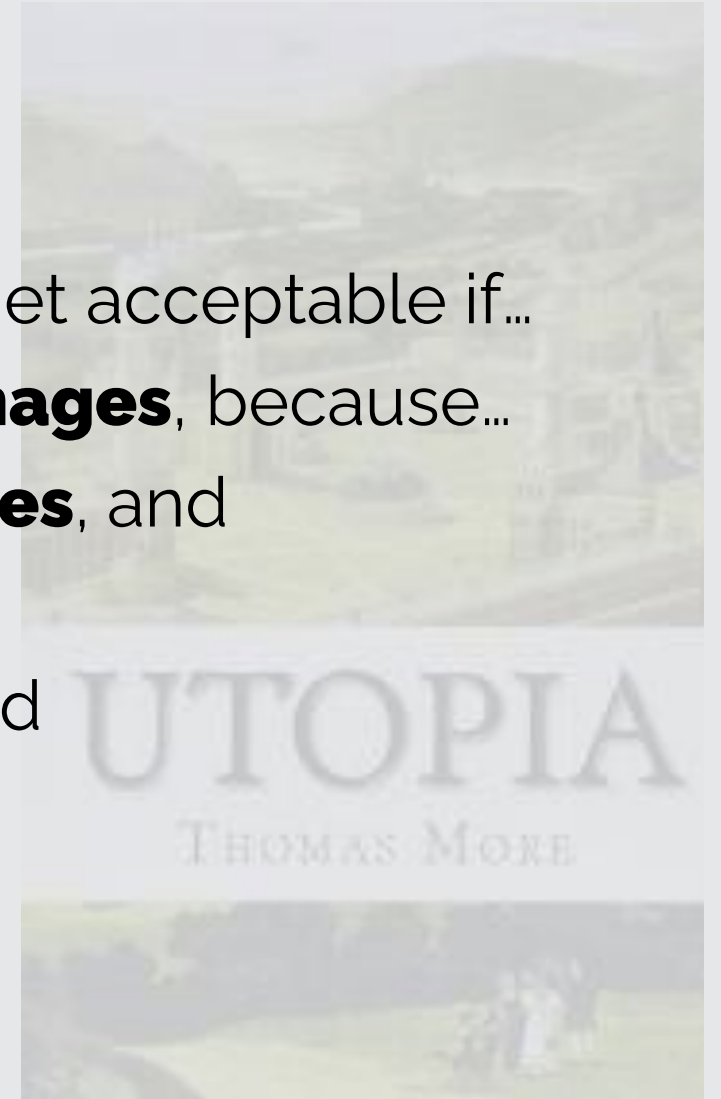
## Key take-aways

- There's a world of **opportunities**
- There are **limits** to growth
  - Castration, gestation crates, social media, antibiotics, (nitrogen) emissions
- **Self-control** is better than be controlled
- Livestock industry has a special **responsibility**
- Europe is largely a-typical with its emphasis on **welfare**
- Knowledge and experience can **help** other countries



## Summarising...

- One day, even **multistorey** pig houses might get acceptable if...
- The pig industry feels confident to **share all images**, because...
- Pigs are allowed to keep their **tails and testicles**, and
- Sows enjoy **freedom** of movement, and
- **Emissions** and manure are being dealt with, and
- **Pig health** can be guaranteed.





## Special thanks to...

- Dr Emma Baxter, Scotland's Rural College, UK
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- E. Wayne Johnson, veterinarian, China
- Emmy Koeleman, freelance editor, Netherlands
- Jørgen Lindberg, SPFI, Denmark/China
- Saowanee Pongpueng, supporter of *Pig Progress*, Netherlands
- Dhierinder Ramcharan, Misset, Netherlands
- Allen Shu, correspondent, China
- Dr John Strak, Whole Hog, UK
- Joey Wensink, Misset, Netherlands



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[www.pigprogress.net](http://www.pigprogress.net)

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