



PIG PROGRESS

Ontario Pork AGM | Guelph, ON | Canada

March 19, 2024

Vincent ter Beek, editor, *Pig Progress*

Challenges
and trends
of the global

swine industry



DAIRY GLOBAL

PIG PROGRESS

ALL ABOUT FEED

POULTRY WORLD

FUTURE FARMING



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2. Providing space to sows
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4. Lowering emissions

Bonus question: How about Canada's pork exports to Europe?

Trends elsewhere on the planet

5. Building multistorey
6. Enhancing biosecurity

Bonus question: Where are we with the battle against ASF?

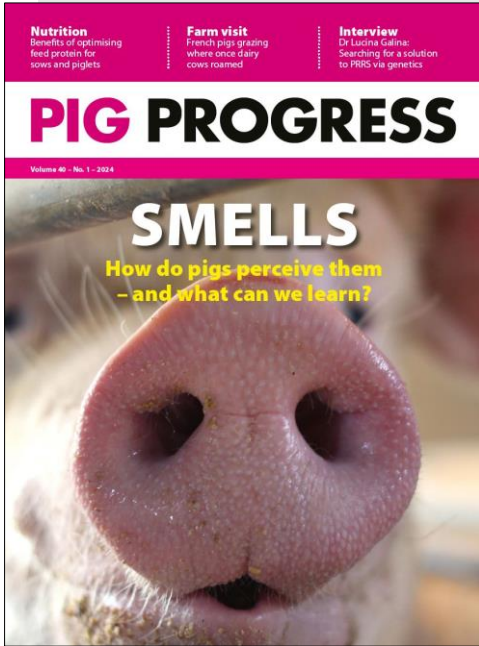
Conclusion



Introduction

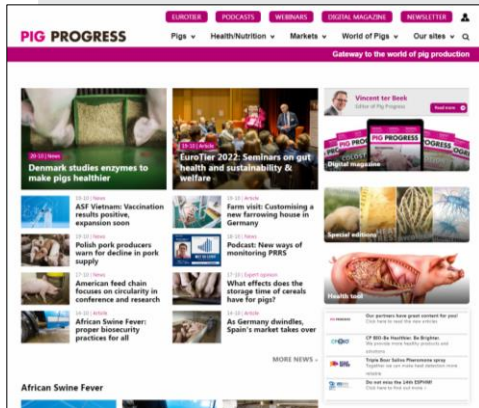


A few words about *Pig Progress*



Magazines & Special editions

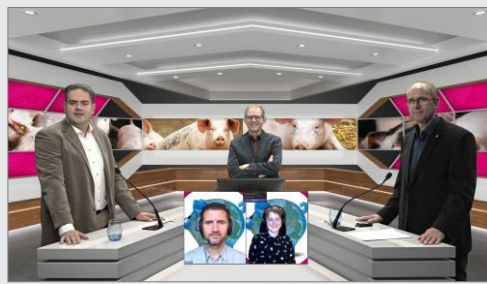
PIG PROGRESS



Website

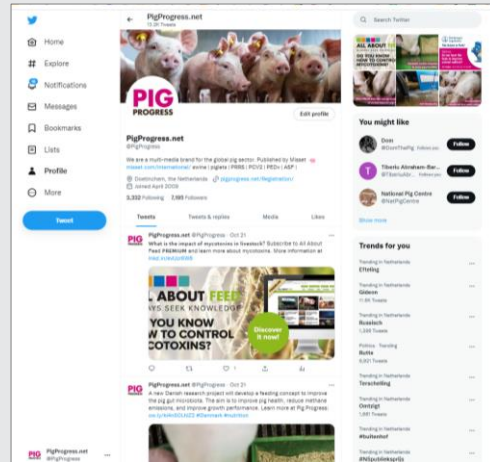


Events



Webinars

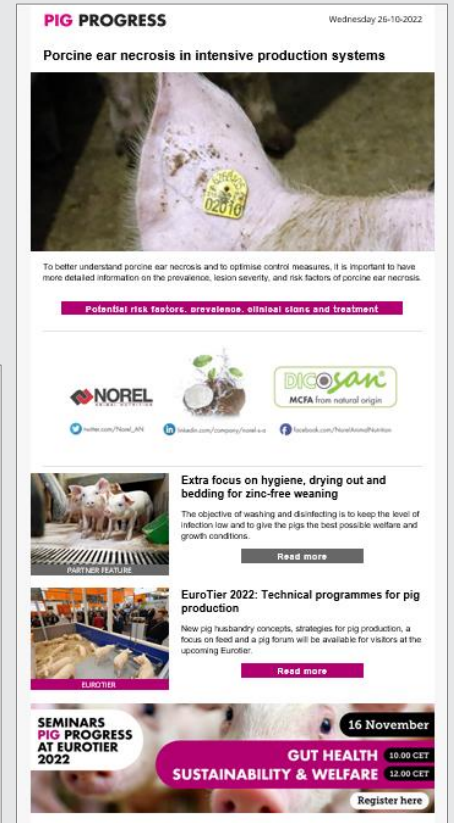
Social Media



Podcasts



Newsletters





Sister titles

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Introduction

- 47 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 (2005-2024)
 - *Pig Progress*





Farm visits





Introduction – Trends

Trend [noun, -s, /trɛnd/]

Form of collective behaviour in which a group of people enthusiastically follow an impulse for a short period. *[Wikipedia]*

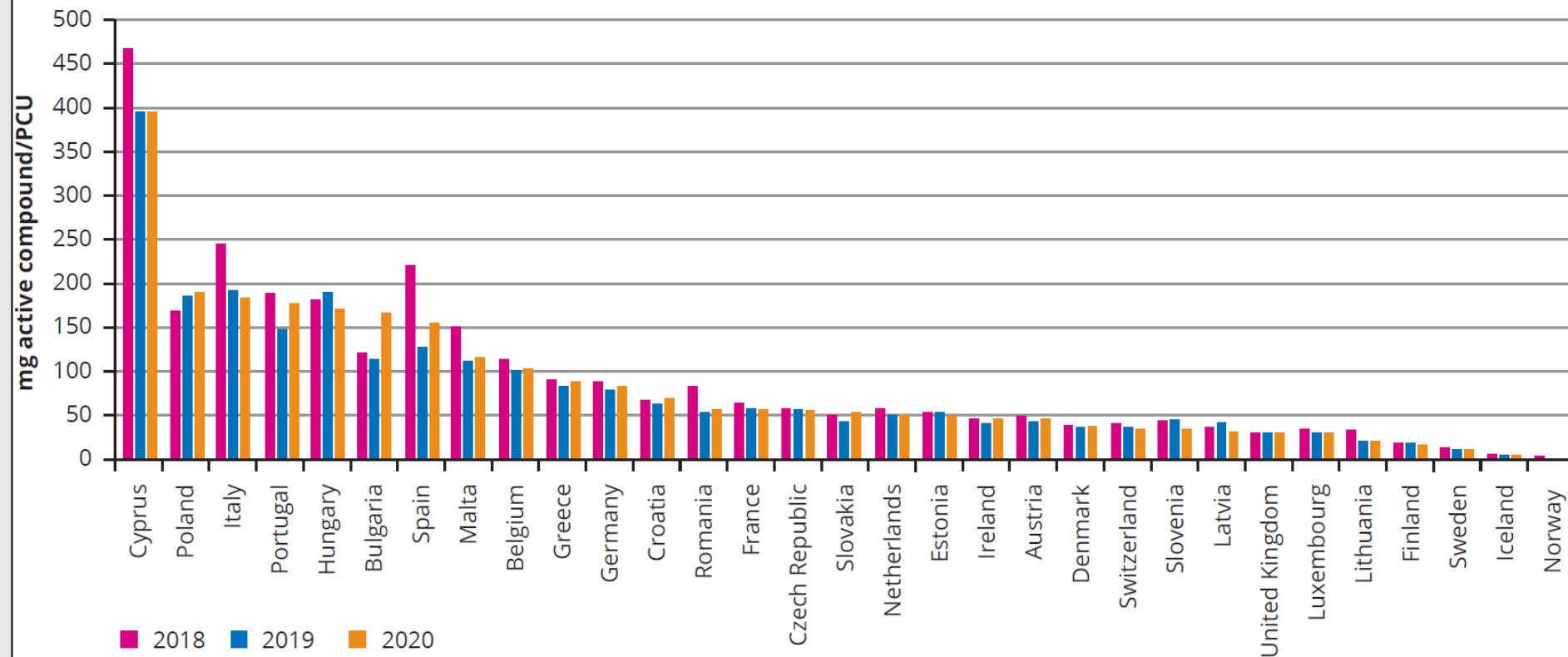


Europe

1. Fewer **antibiotics** (and no ZnO)
2. Providing space to **sows**
3. Keeping **tails & testicles**
4. Lowering **emissions**

1. Producing with fewer antibiotics [and no ZnO]

Figure 1 - Antimicrobial use in animals in 31 European countries expressed in mg active component/PCU between 2018 and 2020 (based on eleventh ESVAC report, 2021).



Pig Progress
38.0g (2022),
after publication
in *Antibiotics*, by
J. Dewulf et al.

1. Producing with fewer antibiotics [and no ZnO]

- **Genetics** (robust or even resistant animals)
- Quarantine and **management** procedures
- Decent **biosecurity**
 - Cleaning and disinfection
 - Insects
 - Water quality
 - Air quality
- **Vaccination** regime
- **Nutrition** (feed ingredients and additives)
- Attention for animal **welfare**
- Specific **marketing** channels
- Not only rules, but also **guidance** by authorities





2022

1. Producing with fewer antibiotics [and no ZnO]

- **European Union** → Maximum zinc allowance 150ppm (2017; 2022)
- **Canada** → Levels of zinc allowed up to 350 ppm (2022; 2026)
- **PR China** → Zinc in ZnO should not exceed 1,600 ppm (Announcement 2625, 2017)



E. coli



1. Producing with fewer antibiotics [and no ZnO]

- **Genetics:** Role of hyperprolific sows?
- **Health:** Vaccination against *E. coli*
- Feed **formulation**
 - Low protein diets
 - Wheat bran
- Feed **additives**
 - Probiotics
 - Benzoic acid
 - Yeast (through sow and piglet nutrition)
- Adjusted **zinc** products (e.g. HiZox, Animine)
- Preparing the **microbiome** pre-weaning
- Better **welfare** → Piglet robustness
- **Weaning** age

“There is no silver bullet.”

“It is a holistic problem.”

“The microbiome is an important factor.”





2. 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 Ouderwep: 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.

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.

Brazil's JBS to phase out gestation stalls

12-06-2013 | 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.

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?

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 m² (24 ft²) 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.

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The open housing system as designed by Maple Leaf. - Photo: Maple Leaf

Maple Leaf completes conversion to group housing

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 Polkphand Foods

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

GESTATION CRATES

2. 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**

2. Providing space to sows

- **Resolution** to end cage system was to be put forward in European Parliament by late 2023 – currently postponed
- 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)



2. 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

2. Providing space to sows



Total liberty during farrowing and lactation.
Photo courtesy of Big Dutchman

FREE
FARROWING



Temporary confinement of sows for first few days.
Photo courtesy of Big Dutchman

2. Providing space to sows

- **Germany**, as from February 2029: No more insemination crates – just brief confinement for insemination, heat control or medical treatment purposes.
- **United States**, under Prop 12 (California): Sows can be confined for a maximum of 6 hours up to maximum 24 hours/month. The state Massachusetts has a comparable initiative (Question 3).

FREEDOM AT
BREEDING





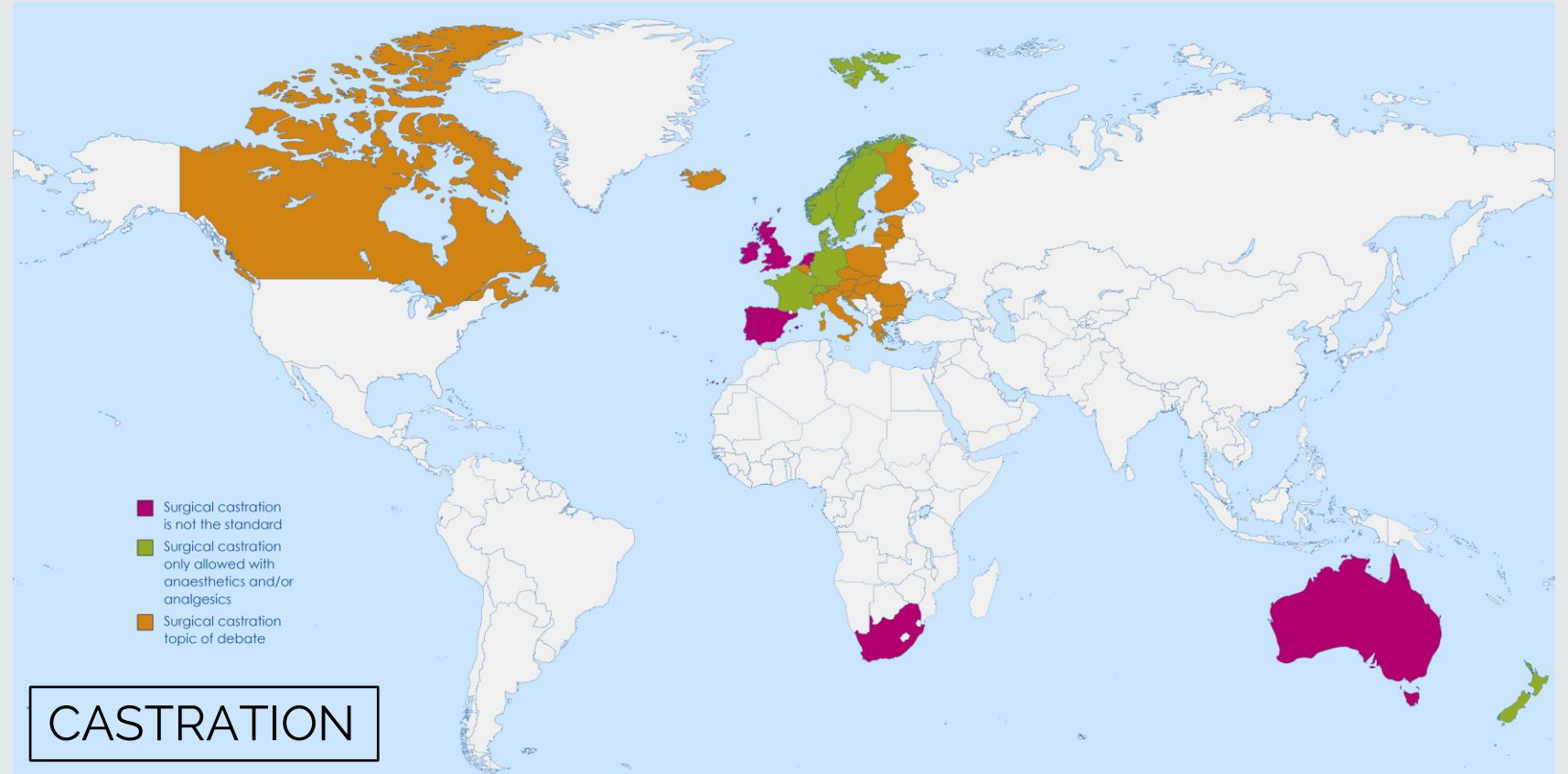
3. Keeping tails & testicles

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

- 10
- 5
- 3
- 1
- 0

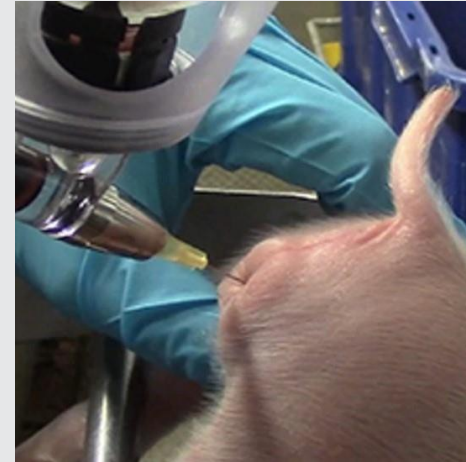
3. Keeping tails & testicles

- 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**



3. 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)

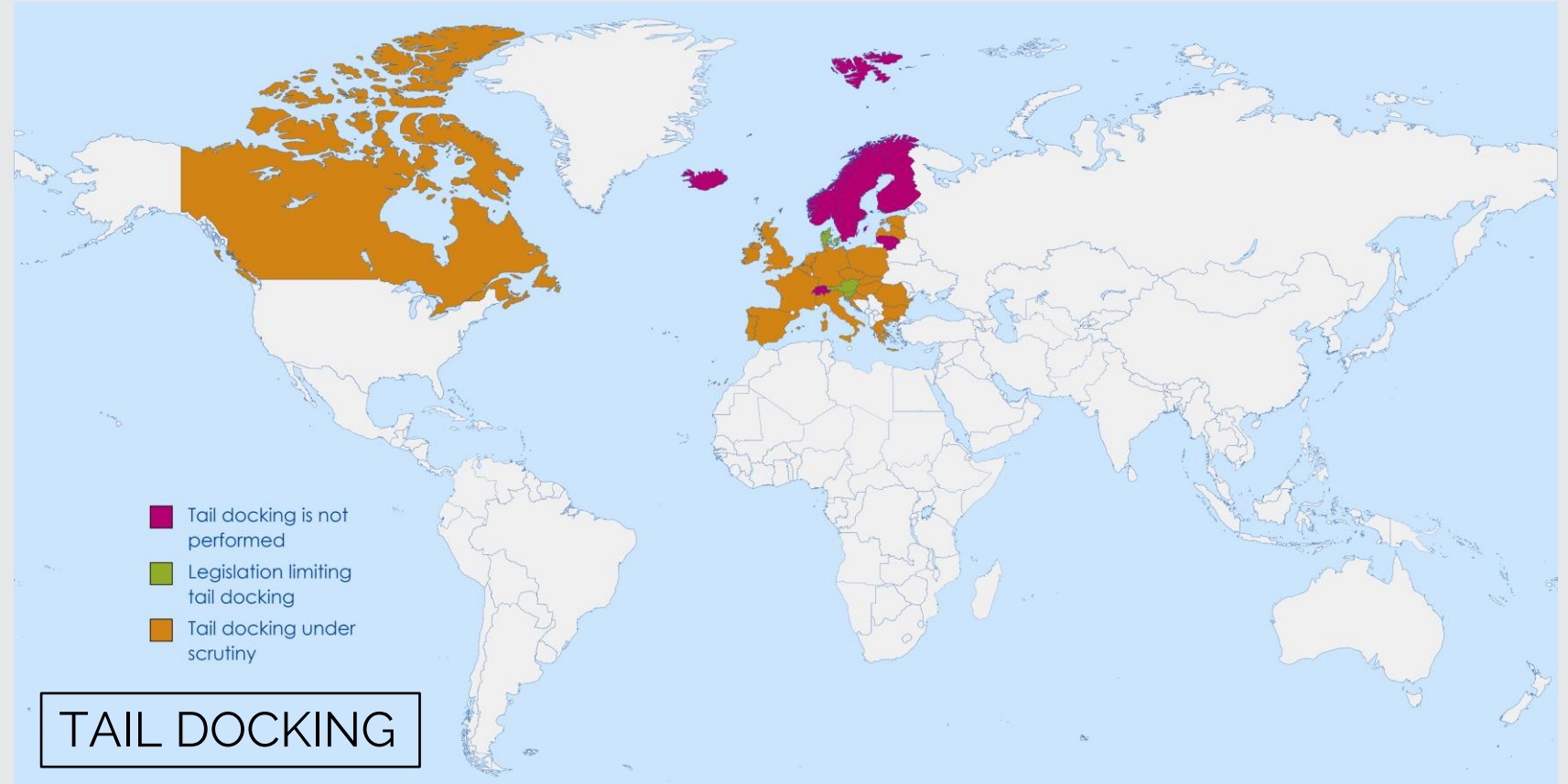


CASTRATION



3. 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**



3. 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





3. Keeping 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

4. Lowering emissions

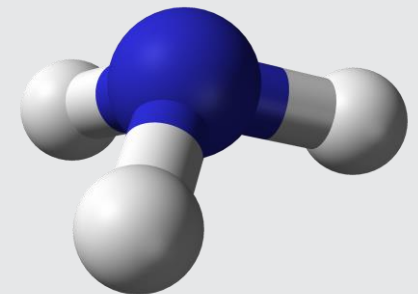
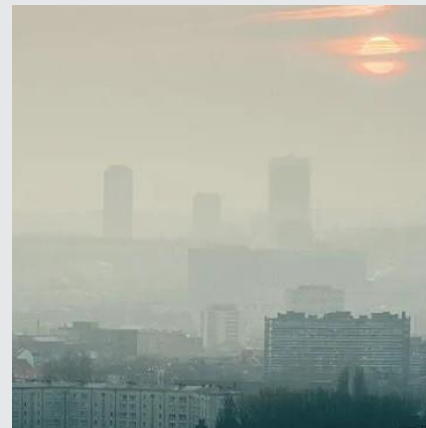
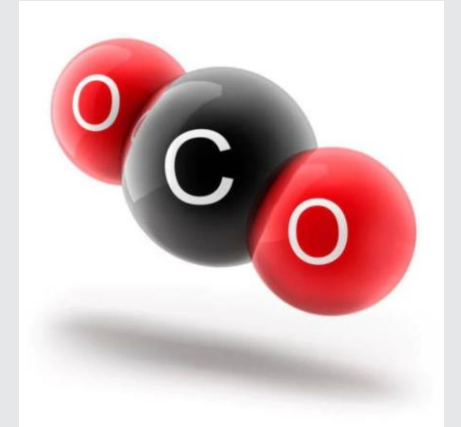
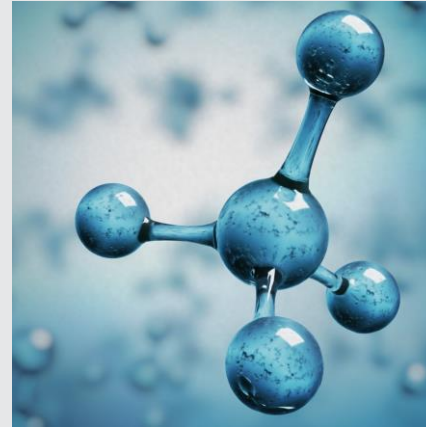
- Oct 1, 2019
- Oct 14, 2019
- Oct 16, 2019
- Oct 25, 2019
- Dec 18, 2019
- Feb 19, 2020
- June 10, 2022
- June 14, 2022
- June 27, 2022
- June 28, 2022



4. Lowering emissions

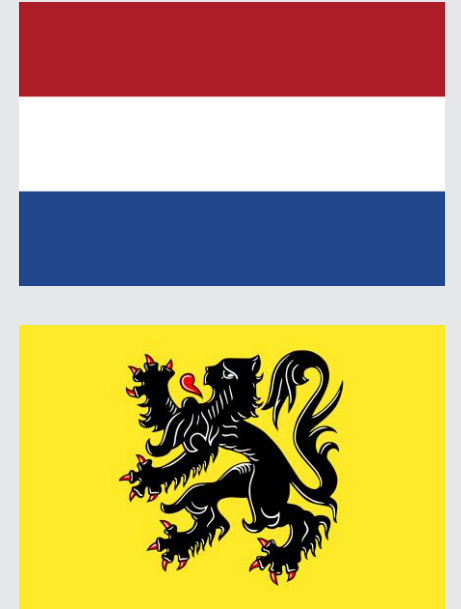
In some countries not a problem – in others they are considered problematic.

- Methane (**CH₄**)
- Carbon dioxide (**CO₂**)
- Microscopic particles
- Ammonia (**NH₃**)



4. 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

4. Lowering emissions – nitrogen deposition

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

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**

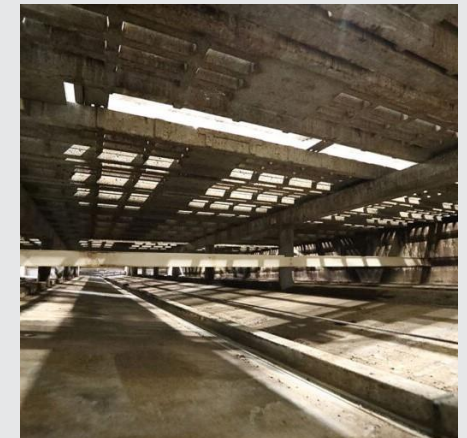
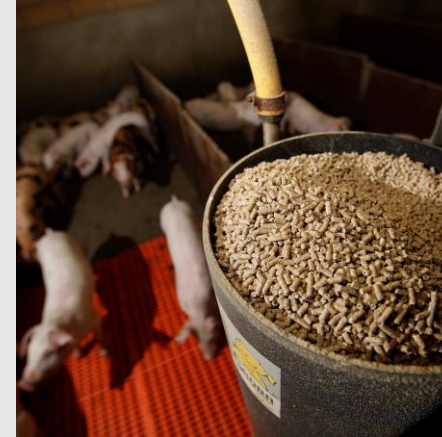
There are lessons to be learnt!

- 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



4. Lowering emissions – solutions

- **Air** scrubbers
- Precision **feed** formulation
 - Low in crude protein (31% reduction in NH_3 , WUR, 2022)
 - Low in phosphates
- **Climate** measures
- Use of manure for **biogas** production
 - Consists of CH_4 and CO_2
- **Manure** separation & processing (e.g. Trac by Cooperl)
 - Direct separation at the source
 - Relatively clean air in the pig house
 - NH_3 and CH_4 levels lower





How about Canada's pork exports to Europe?

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Exporting to Europe?

CETA (Comprehensive Economic and Trade Agreement)

- Provisional application as from **Sept 2017** – 18 EU states approved it



TCA (Trade Continuity Agreement)

- Application as from **April 2021**



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Non-tariff barriers

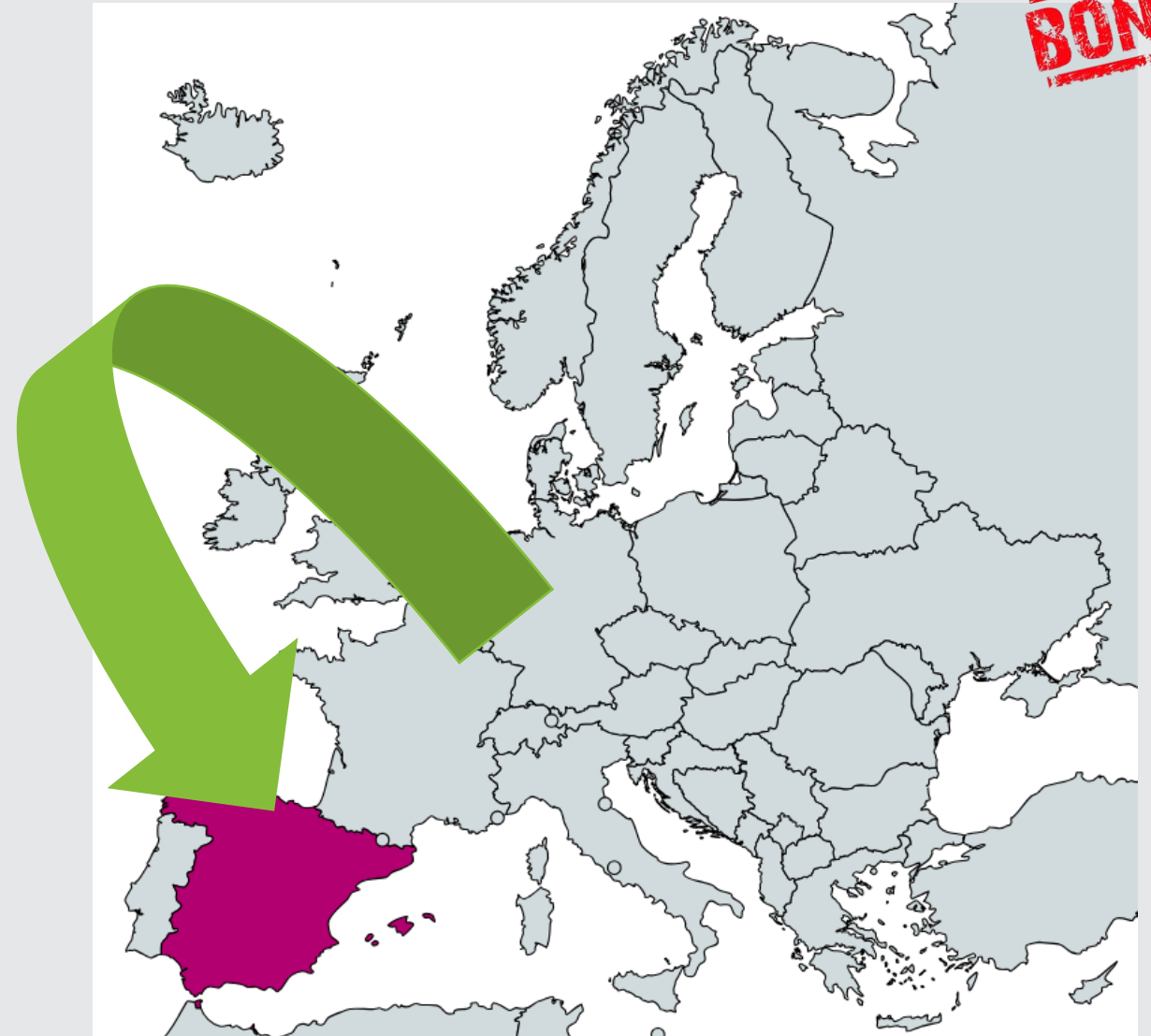
- CETA does not regulate **non-tariff** barriers
 - High levels of **requirements** (welfare, environment)
 - No use of **chemicals** for carcass decontamination
 - No **GMO** use when producing pigs
 - No use of **ractopamine** during production
- **European Parliament** (Dec 2023):
 “...Canada has yet to satisfactorily implement the recommendations [...] on the traceability and quality of the control systems...”
- As from 2022: **80,549** metric tons per year (2023: **2,548** metric tons)

Rank	Destinations	2023 volume (in million metric tons)
1.	United States	428
2.	China	239
3.	Japan	184
4.	Mexico	172
5.	Philippines	108
6.	South Korea	53
7.	Taiwan	51
8.	Colombia	22
9.	Australia	9
10.	New Zealand	7
	Others	65
	Total	1,338



Market opportunities

- Pig numbers are **falling** (EU-27)
 - **2016:** 142.6 million
 - **2023:** 133.6 million
- **Western Europe:** Denmark, Belgium, Netherlands, Germany, France
- **Eastern Europe:** (indirect) effects of ASF
- **Self-sufficiency rate** to around 100%
- Spain: Growth to **34.5** million pigs
- Markets in **Asia** offer more opportunities
 - Efficiency is lower
 - Feed is expensive
 - Animal health (ASF, PRRS)



Political climate

- **Green Deal**
 - Plan from 2020 → aiming for climate neutrality in 2050
 - Ongoing legislative pressure
 - Regulations are piling up
 - Green Deal is put on hold
- European **elections** in June → move to the right



BONUS



Rest of the world

5. Enhancing **biosecurity**
6. Building **multistorey**

5. 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
 - Dead infected pigs washed ashore in Taiwan
 - ASF virus is also in wild boar in Asia (e.g. South Korea, Malaysia, rare reports from China)
- Various other genotypes in Africa, to date in total: **6**.

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



*Dead wild boar due to ASF in peninsular Malaysia, June 2022.
Source: Matthew S. Luskin & team*



5. Enhancing biosecurity

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

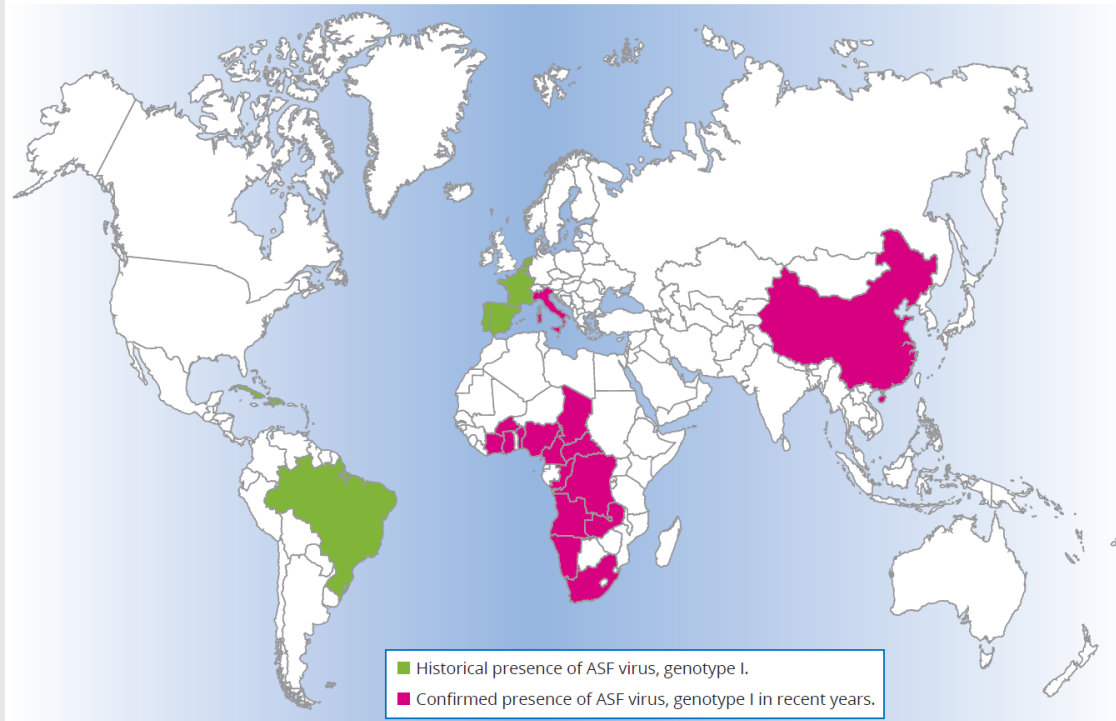
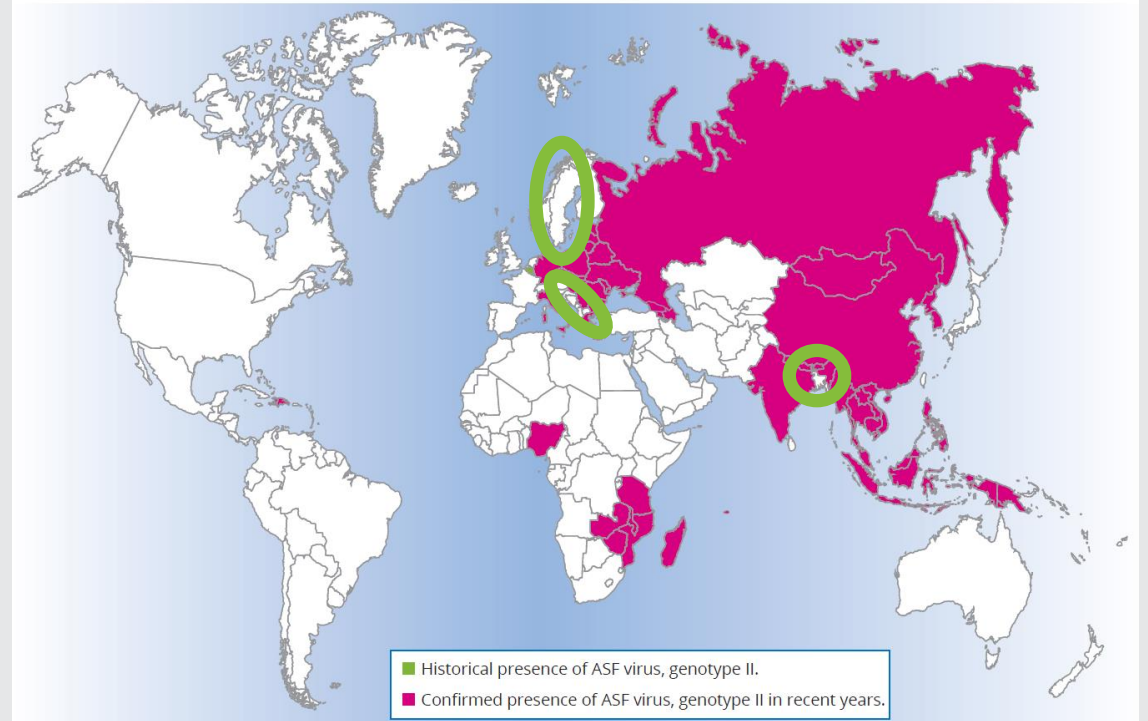


Figure 2 – Historical and contemporary confirmed occurrence of ASF virus, genotype II.



Source: Pig Progress, 39.03 (2023)

5. 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

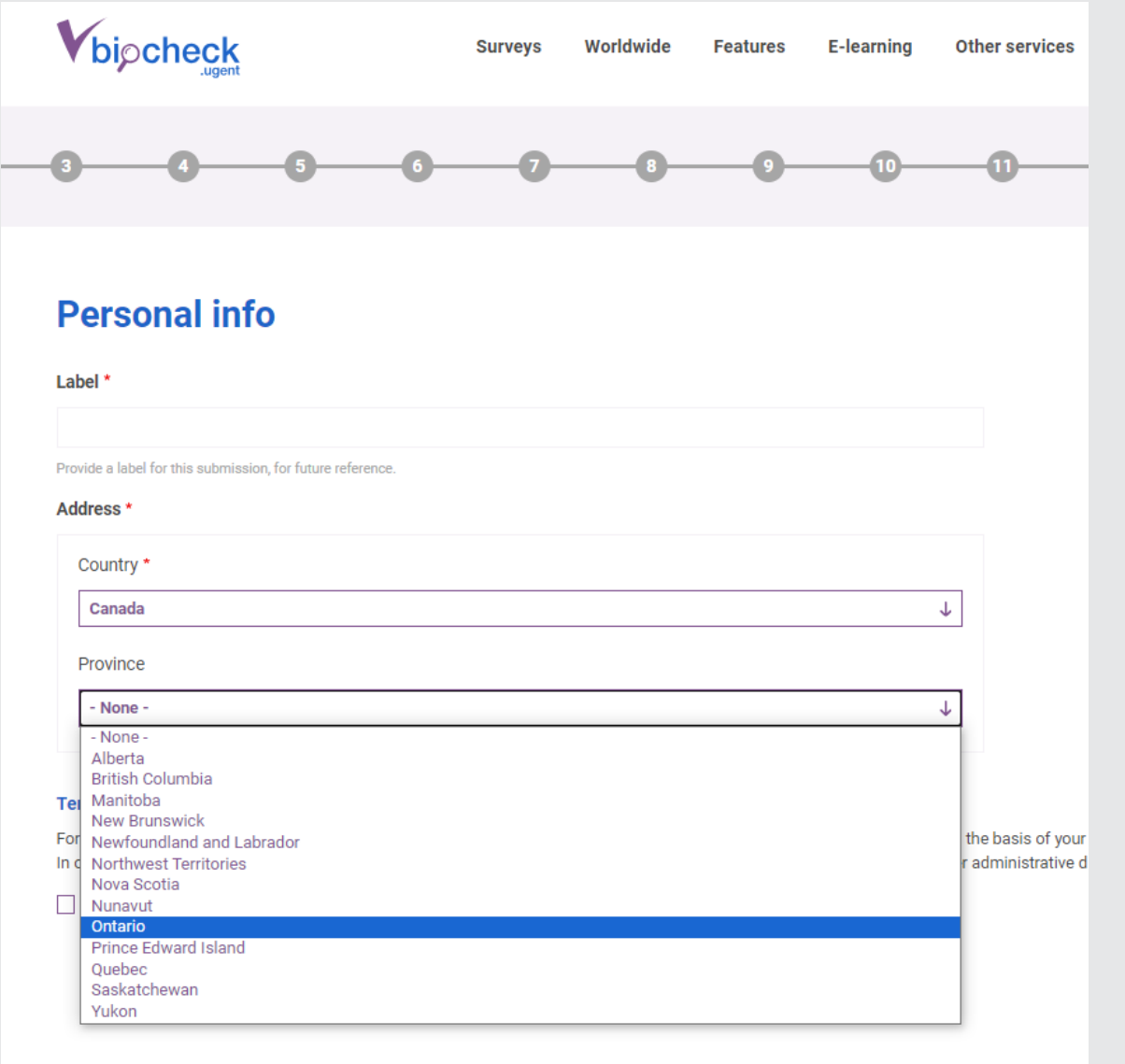
*“Biosecurity
is a matter
of mindset”*

*Vincentius in Annis
(2024 AD)*



5. Enhancing biosecurity

- BioCheck (University of Ghent, Belgium)
biocheckgent.com
- Focus on internal and external biosecurity
- Available in 12 languages (including English, French, Spanish and Chinese)



The screenshot shows the BioCheck .ugent website interface. At the top, there is a navigation menu with links for 'Surveys', 'Worldwide', 'Features', 'E-learning', and 'Other services'. Below the navigation is a progress bar with 11 numbered steps, with step 5 currently selected. The main content area is titled 'Personal info' and contains several form fields:

- Label ***: A text input field with a placeholder text: 'Provide a label for this submission, for future reference.'
- Address ***: A section containing:
 - Country ***: A dropdown menu with 'Canada' selected.
 - Province**: A dropdown menu with '- None -' selected. The dropdown is open, showing a list of Canadian provinces and territories: Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario (highlighted in blue), Prince Edward Island, Quebec, Saskatchewan, and Yukon.

6. 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



6. 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

6. 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)



6. 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?





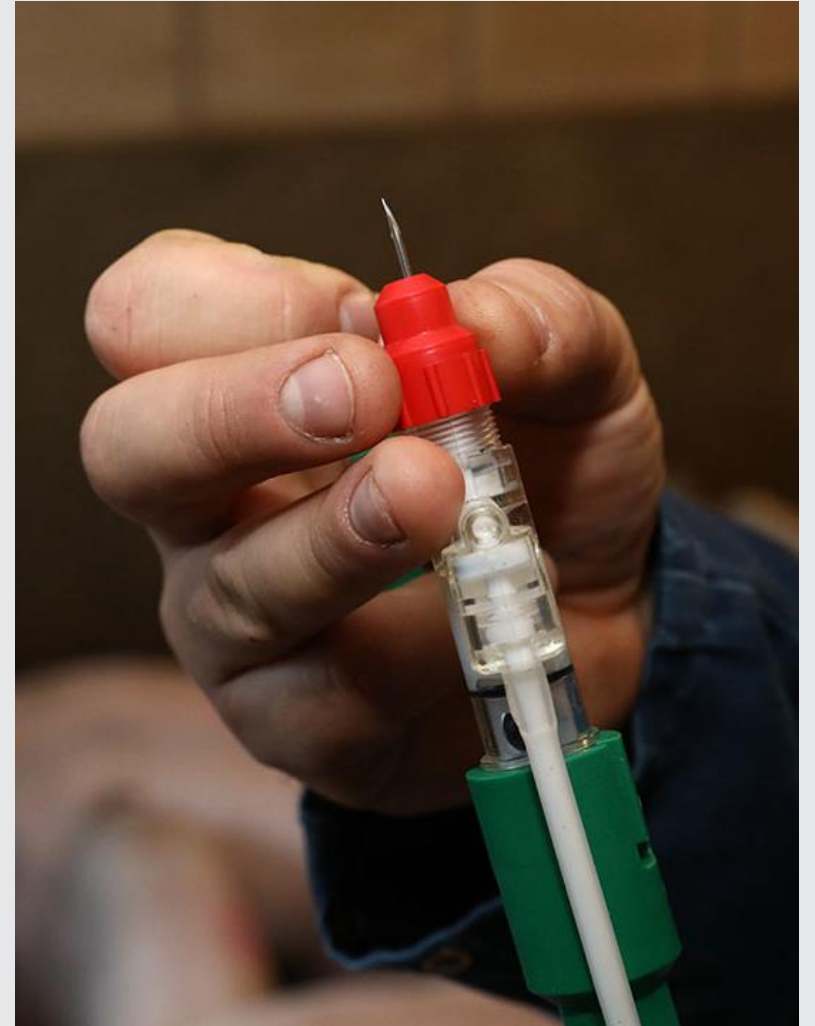
Where are we with ASF?



BONUS

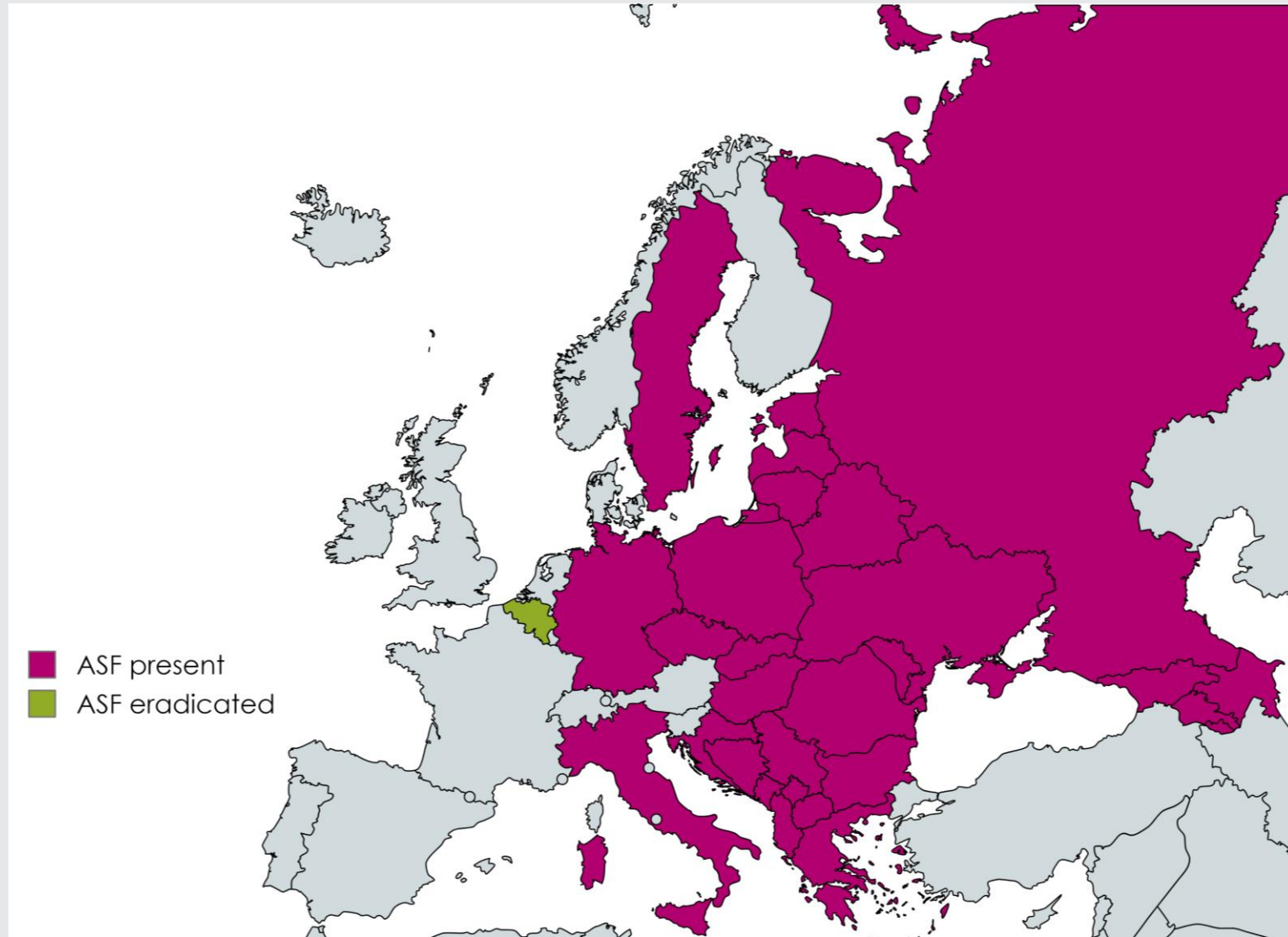
Vaccination

- **Three vaccines** in Vietnam
 - AVAC (one shot) – with international interest
 - Navetco (two shots)
 - Dabaco (not marketed yet)
 - All working on US based research
- **Numerous initiatives** all over the planet
 - European consortia
 - Vacdiva (e.g. Merck)
 - Vax4ASF (e.g. Hipra)
 - Chinese Academy of Agricultural Sciences
 - CSIRO (Australia) and MBF Therapeutics
 - Huvepharma & CReSA-IRTA





Europe

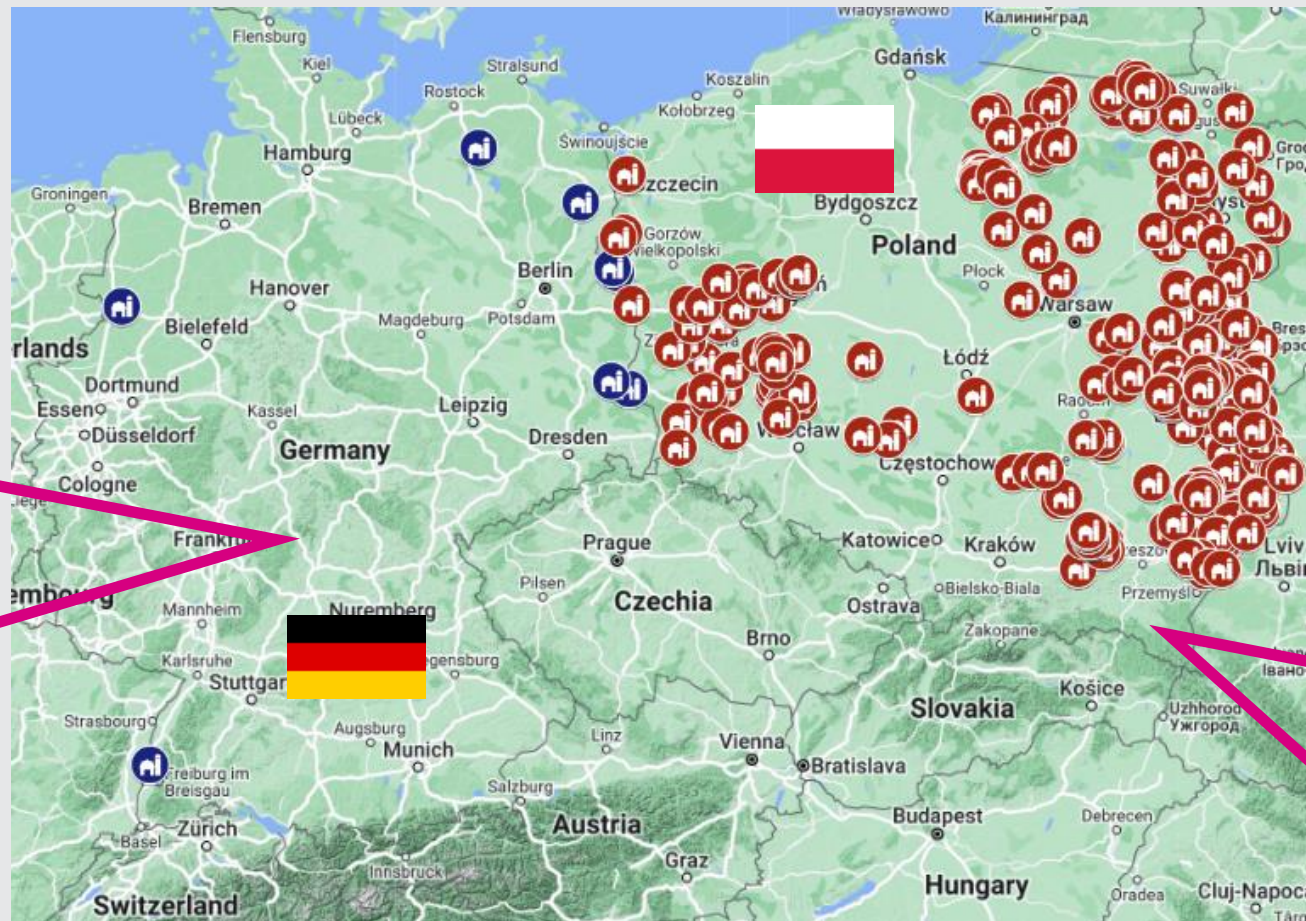


BONUS

Poland (since 2014) and Germany (since 2020)

GERMANY

- **8** farms infected
- 3 > 1,000 pigs (38%)
- 4 < 100 pigs (50%)
- Situation getting under control



POLAND

- **508** farms infected
- 35 > 1,000 pigs (7%)
- 384 < 100 pigs (76%)
- ASF still flares up

Italy (since 2022)

GENOA area

1,561 feral pigs infected
9 farms (19,810 pigs)
Still new outbreaks

SARDINIA

ASFv genotype I
endemic
No feral pigs infected
1 farm (13 pigs)
No new outbreaks

ROME

91 feral pigs infected
1 farm (9 pigs)
No new outbreaks

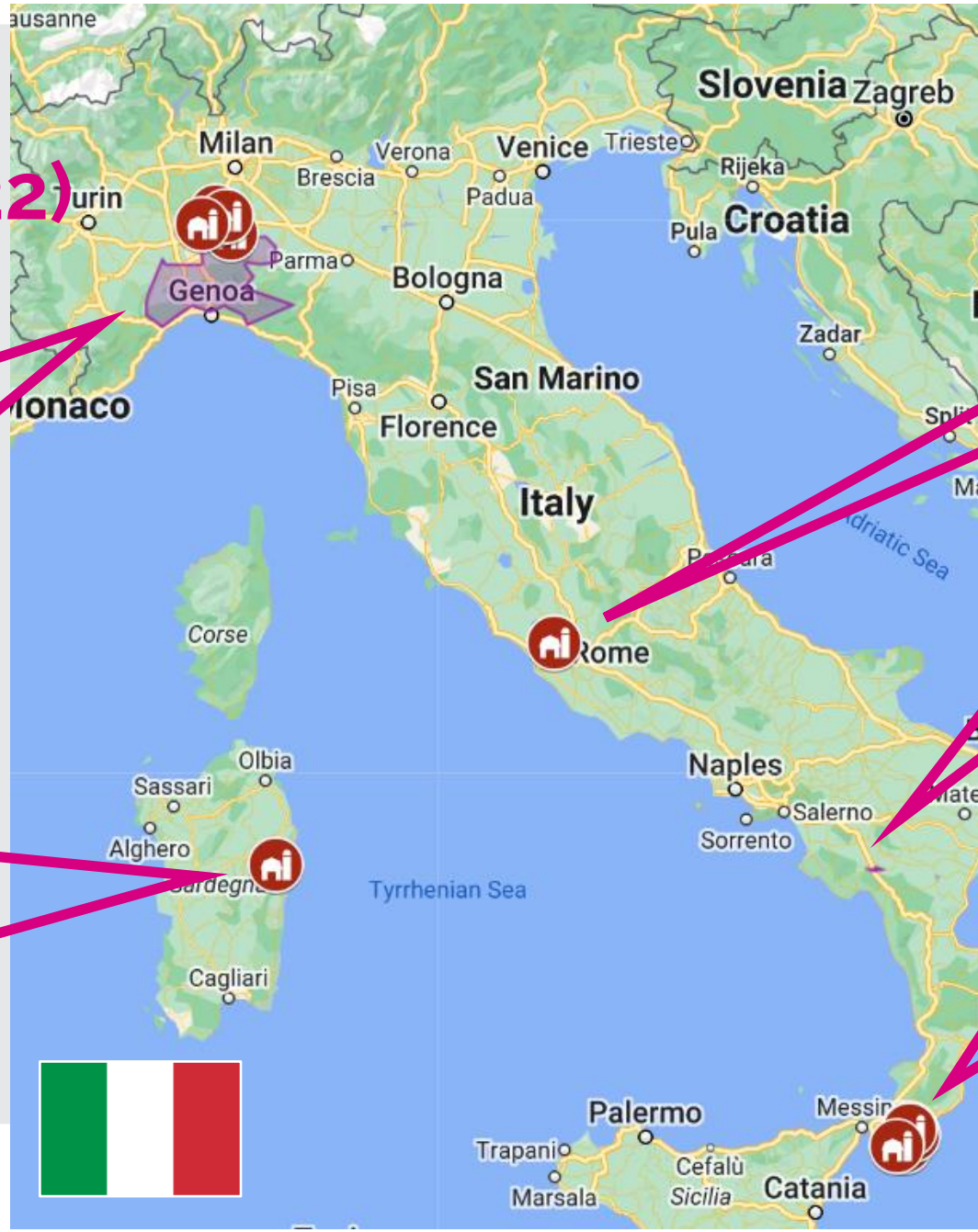
CAMPANIA

30 feral pigs infected
No farms infected
Occasional outbreaks

CALABRIA

17 feral pigs infected
6 farm sites (559 pigs)
Relatively quiet

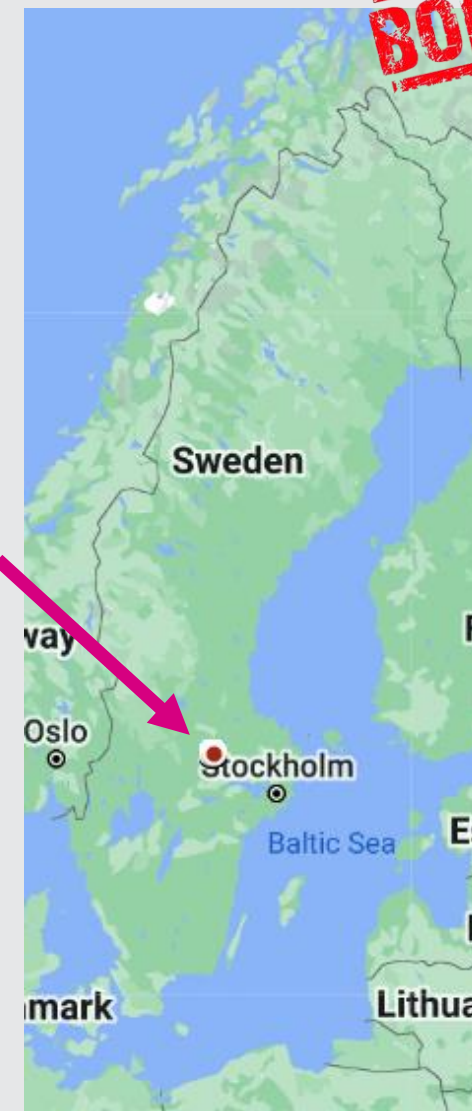
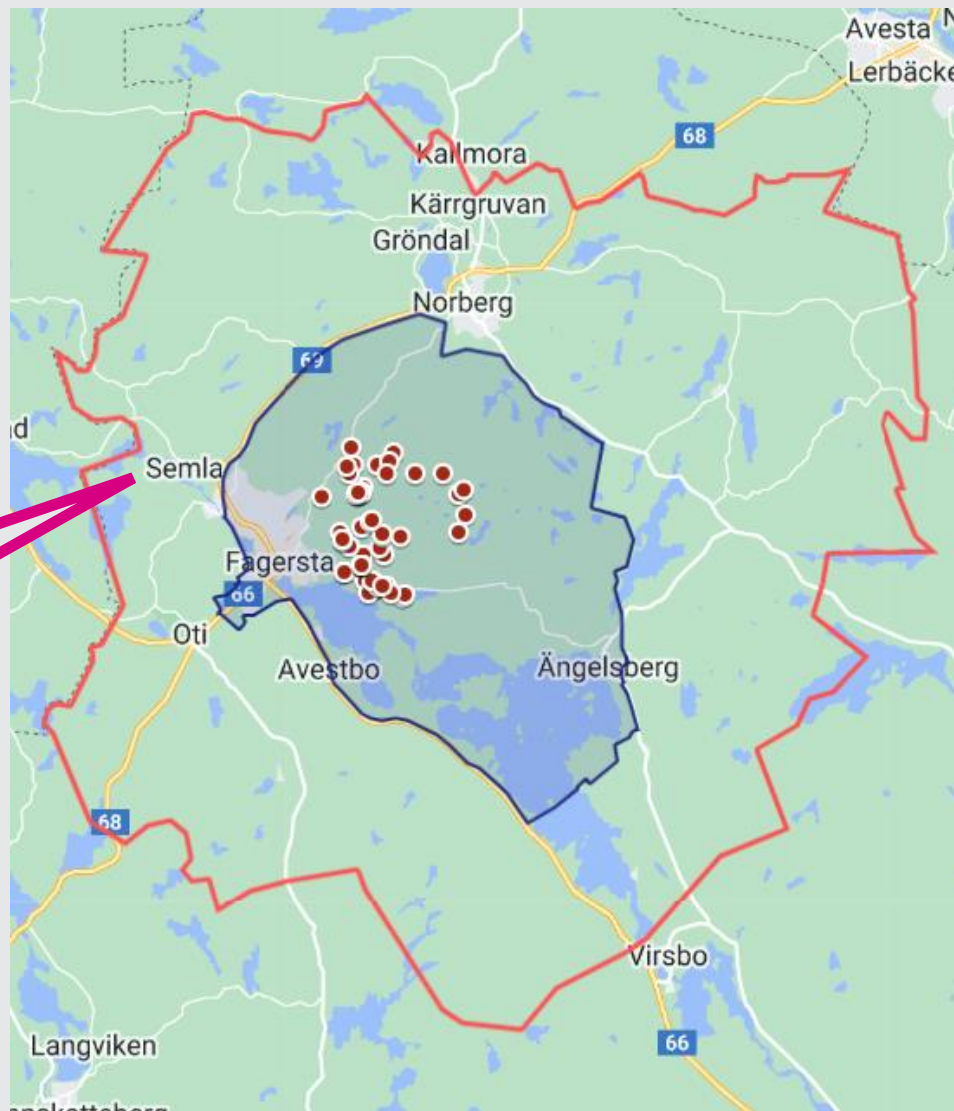
BONUS



Sweden (only 2023)

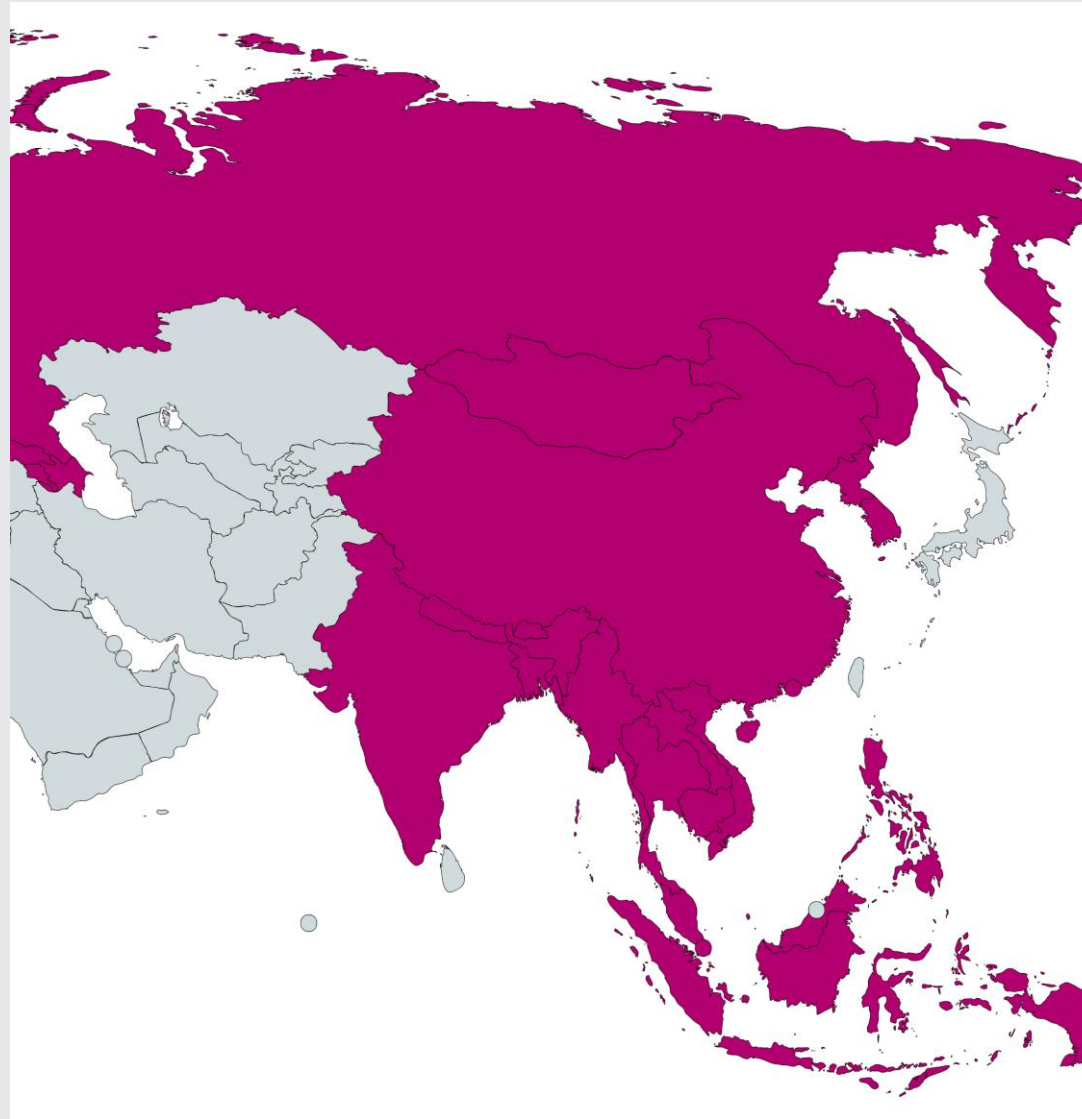
VÄSTMANLAND

- Outbreaks close to Fagersta
- Only **62** infected feral pigs
- No farms infected
- Aiming for ASF-free status





Asia (since 2017)



BONUS

**PAPUA NEW
GUINEA**
ASFv found in
April 2020

BONUS

Dominican Republic/Haiti (since 2021)

CUBA

- Free from ASF
- Outbreak genotype I in **1971**
- Outbreak genotype I in **1980**



DOMINICAN REPUBLIC

- Outbreaks since April 10, 2021
- By April 2022: **>180,000** pigs culled
- Also outbreaks genotype I until **1981**

HAITI

- Outbreaks since August 26, 2021
- Chaos – hard to give estimates
- Also outbreaks genotype I until **1984**



eonclusion



Key take-aways

- **Europe:** Trends to rethink current practices
 - Antibiotics, sows, tails & testicles, emissions
- **World:** Trends to grow bigger
 - Multistorey, health challenges
- Should pig production be allowed to grow **unlimited** or are there **limits** to growth?



Your bonus questions

- Will Canada soon be able to start **exporting to Europe**? Unlikely
 - Non-tariff barriers
 - Other areas to export to are more logical
 - Political climate
- Is **ASF** under control soon? Unlikely
 - Working on an ASF vaccine → only in Vietnam for now
 - Virus will stay endemic in feral pigs
 - Biosecurity remains important



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