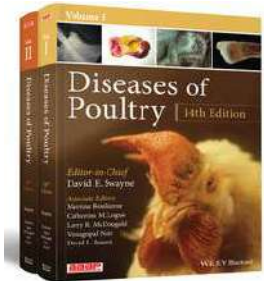


Global Progress Towards Acceptance of Vaccination as a Prevention and Control Tool Against H5 High Pathogenicity Avian Influenza



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Disclaimer: This presentation is based on current scientific data and field information, and is not an endorsement of any specific product or company

2 Who supports HPAI Vaccination?

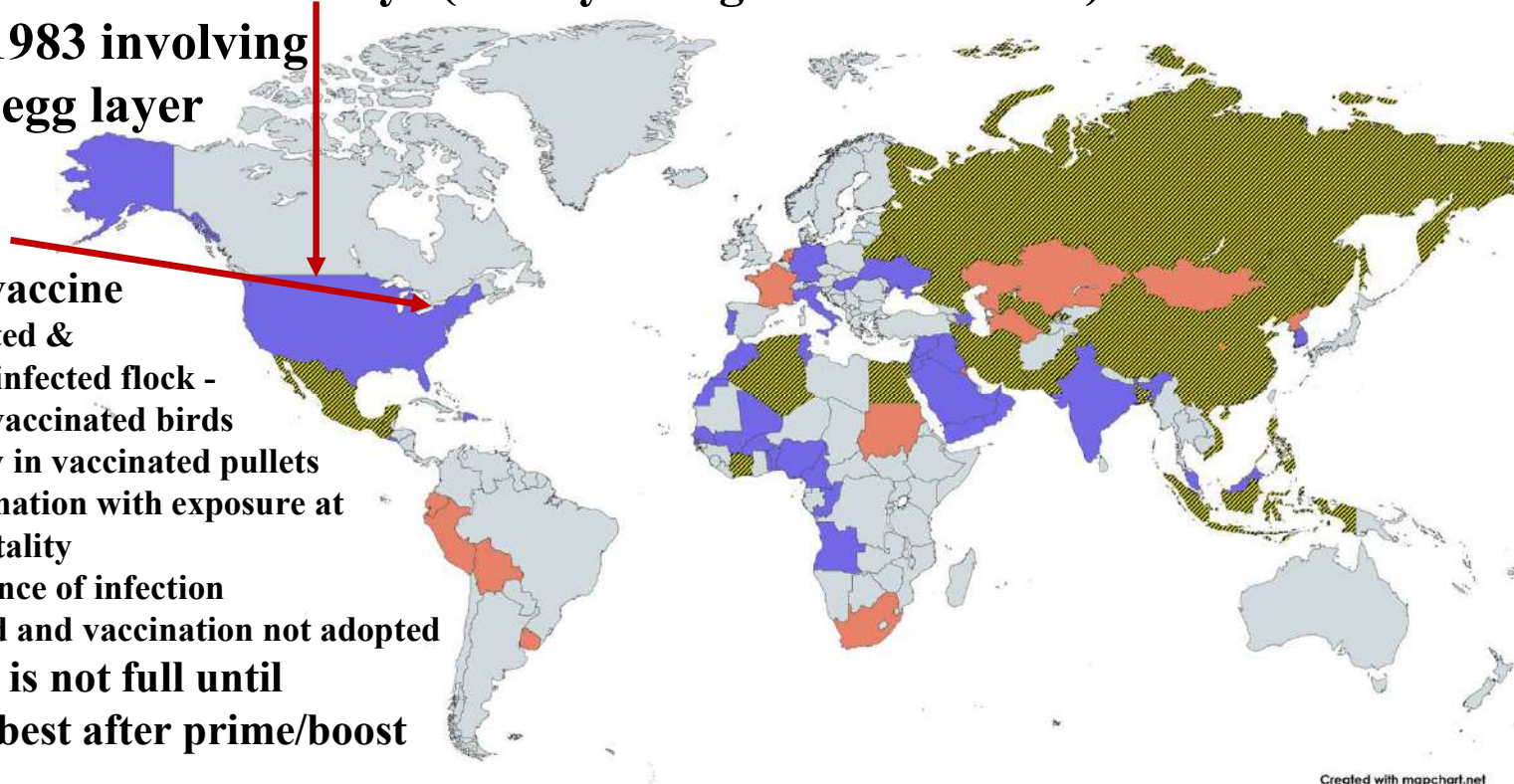
WOAH – intergovernmental organization for animal health:

- The Code and Manual support vaccination as a control tool
- Supports trade in vaccinated poultry in the presence of **appropriate surveillance** to demonstrate freedom of HPAI virus infection
- **WOAH Policy Brief on HPAI Vaccination (29 Dec 2023):**
 - stricter biosecurity measures and mass culling of poultry may no longer be sufficient to control the disease**
 -poultry vaccination can no longer be excluded from the available alternatives and should be considered a complementary tool**



3 Where has Avian Influenza Vaccination of Poultry Occurred?

- Between 2005-2026, some countries have vaccinated for **HPAI**, **LPAI** or **HPAI & LPAI**
- **USA:** H5/H7 LPAI turkeys (1978-1995), H7N2 LPAI Connecticut layer company (2003-2004), H1 and H3 LPAI in turkeys (mostly autogenous - current)
- **USA – Pilot study in 1983 involving**
 - 4 broiler breeder, 2 egg layer & 4 unspecified breeder flocks (PA)
 - Inactivated H5N2 AI vaccine
 1. Layer pullets: Vaccinated & immediately moved to infected flock - 54% mortality in non-vaccinated birds but only 19% mortality in vaccinated pullets
 2. Broiler Breeder: Vaccination with exposure at 5 DPV: only 3.4% mortality
 3. Other 8 flocks no evidence of infection
 4. Pilot studies terminated and vaccination not adopted
 - Reaffirmed protection is not full until 3-4 weeks PV and best after prime/boost



3.1 Global HPAI Vaccination: Nationwide, Blanket **(Systematic)** Program

- After HPAI become endemic in poultry → vaccination used for food security and prevent human infection (H5 Gs/GD), but not utilized in strategy with a goal of eradication

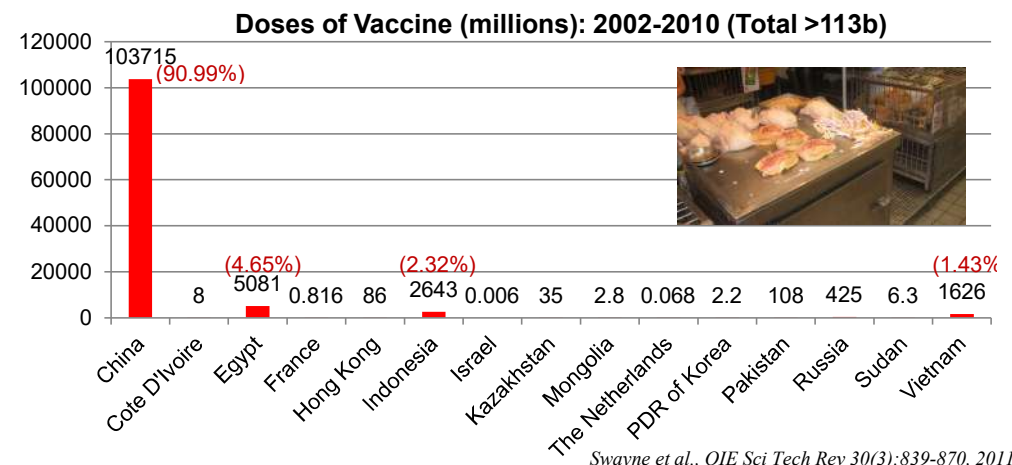
- H5Nx Gs/GD Eurasian lineage:
China (~300B doses), Indonesia, Vietnam, Egypt, Bangladesh
- H7N3 N. American lineage (2012-):
Mexico, Guatemala
- H7N9 Eurasian lineage (2017-): China

- Today few outbreaks reported

- Control Strategy:

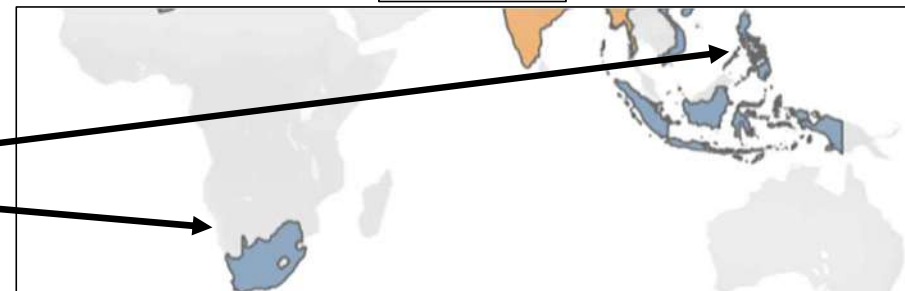
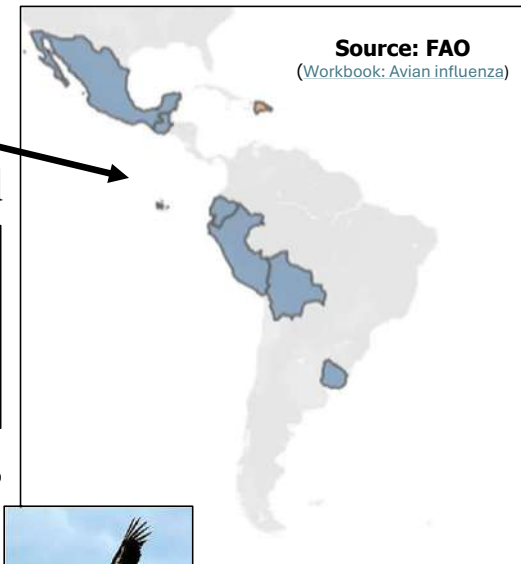
- Insufficient biosecurity
- Inadequate surveillance
- Minimal use of stamping-out

} → **NOT ERADICATED**



3.2 Global HPAI Vaccination: **Emergency Program** since 2023

- Prevention in the Americas for H5N1 clade 2.3.4.4b Gs/GD HPAI in 2023-2026: six Latin American countries
 - **Mexico, Guatemala, Ecuador and Bolivia**: vaccination of long-lived chickens (layers and breeders)
 - **Peru**: As above + meat turkeys & breeders
 - **Uruguay** – all chickens
- **France**: vaccinated ~120M ducks/year in 3 years (2023-26), with appropriate surveillance to support continuing trade
- **USA, Australia and New Zealand**: Vaccinating endangered native birds, but not poultry
- Recent approvals for poultry vaccination but pending implementation: **Philippines and South Africa**



3.3 FRENCH EXPERIENCE Since 2023

- Implemented vaccination program in *foie gras* and meat ducks after multiple years of seasonal outbreaks and heavy losses and culling



Excessive burden on public finances

Season	2015/2016	2016/2017	2020/2021	2021/2022	2022/2023	TOTAL
Outbreaks poultry	81	488	492	1377	402	2840
Million of Poultry killed (included preventive killing)	0,35	4,5 (2,5)	3,3 (2,2)	22 (6)	10 (3,5)	40,15 million poultry killed
State/UE compensation for livestock farmers (million €)	136	175	158	621	552	1 642 million euros

3.3 FRENCH EXPERIENCE Since 2023

- Implemented vaccination program in *foie gras* and meat ducks after multiple years of seasonal outbreaks
- Two approved hemagglutinin-only vaccines used since Fall 2023 (subunit H5 protein and saRNA)
- Followed the original and updated EU surveillance programs:

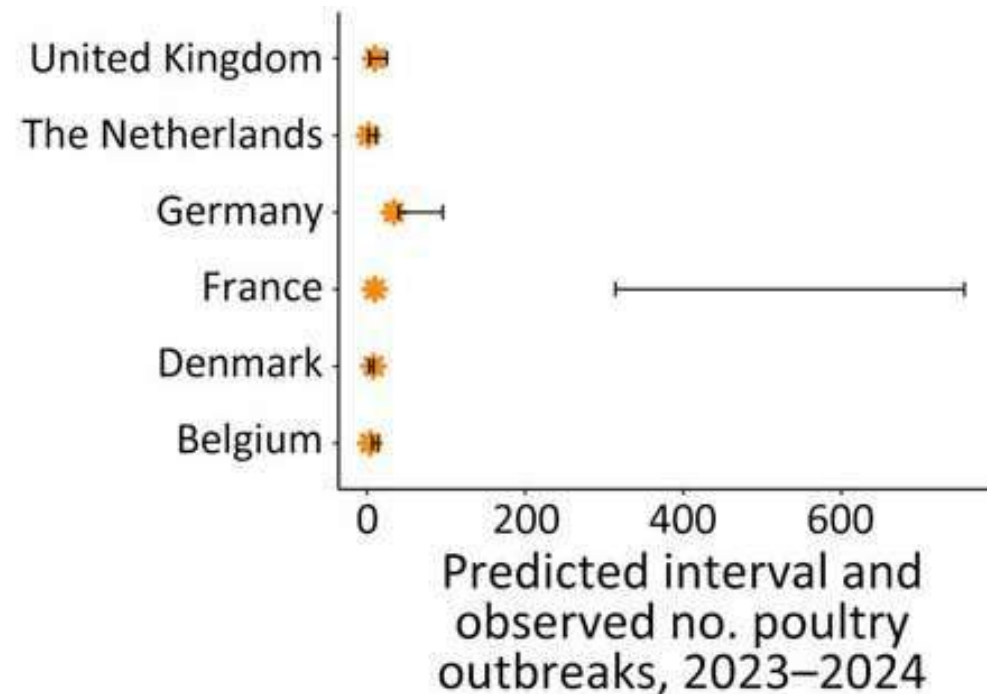
HPAI enhanced post-vaccination surveillance		
Parameters	Enhanced passive surveillance	Active surveillance
Where?	The epidemiological unit	
Who?	Farmer or technical worker	Official veterinary
Frequency?	Weekly	Every 30 days: virological testing On batch completion: serological testing
How?	Swabs (tracheal/oropharyngeal) from 5 dead birds	Every 30 days : Swabs (tracheal/oropharyngeal) from 60 birds; At batch completion: blood samples from 20 birds
Testing?	Virological using M gene RT-PCR. If the result is positive, screening for H5/H7	Virological using M gene RT-PCR (If the result is positive, screening for H5/H7) and NP ELISA serology
Type of laboratory?	A recognised laboratory	An approved laboratory

² Allowing detection of 5% prevalence of infection by the Highly Pathogenic Avian Influenza virus in the epidemiological unit with a confidence interval of 95% as specified by Annex XIII, part 5, of delegated regulation 2023/631.

³ Allowing, as a supplement to virological surveillance, detection of 20% prevalence of infection by the Highly Pathogenic Avian Influenza virus in the epidemiological unit with a confidence interval of 95%.

3.3 FRENCH EXPERIENCE Since 2023

- Implemented vaccination program in *foie gras* and meat ducks after multiple years of seasonal outbreaks
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- 2023-24 modelling study supported a >95% reduction in poultry HPAI cases for 2023-24; i.e. ~10 cases vs modelled for predicted 273-701 cases



EMERGING INFECTIOUS DISEASES*

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Research Letter

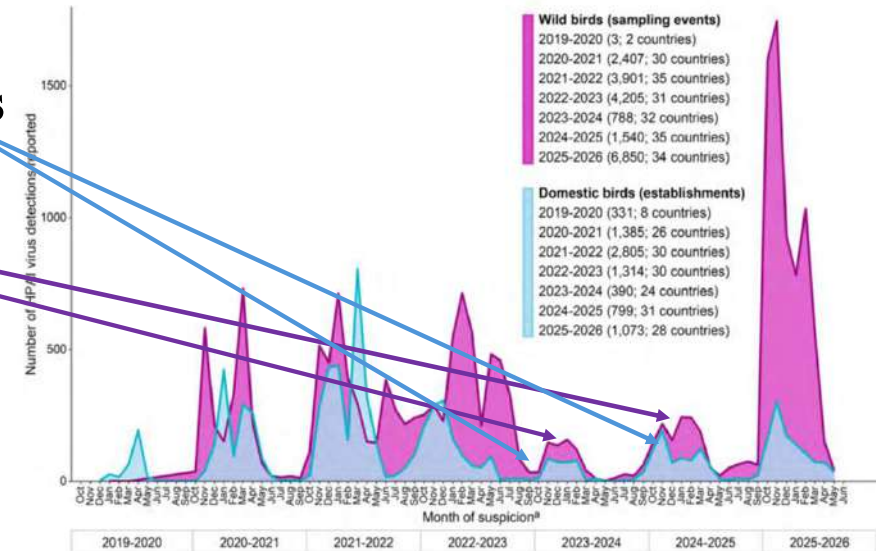
Promising Effects of Duck Vaccination against Highly Pathogenic Avian Influenza, France, 2023–2024

Claire Guinat¹, Lisa Fourtune, Sébastien Lambert, Eva Martín, Guillaume Gerbier, Andrea Jimenez Pellicer, Jean-Luc Guérin, and Timothée Vergne

On This Page

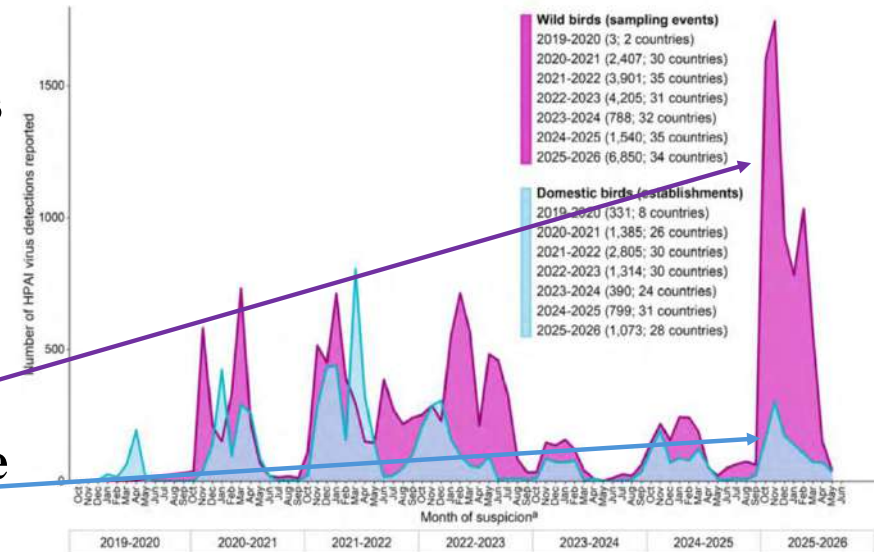
3.3 FRENCH EXPERIENCE Since 2023

- **2023-2024 and 2024-2025 seasons: decline in migratory bird cases and decline in poultry cases across Europe**
- **France cases:**
 - **2023-24: ~10 cases (2 vax ducks) –**
 - 2024-25: 19 cases (4 vax ducks)**



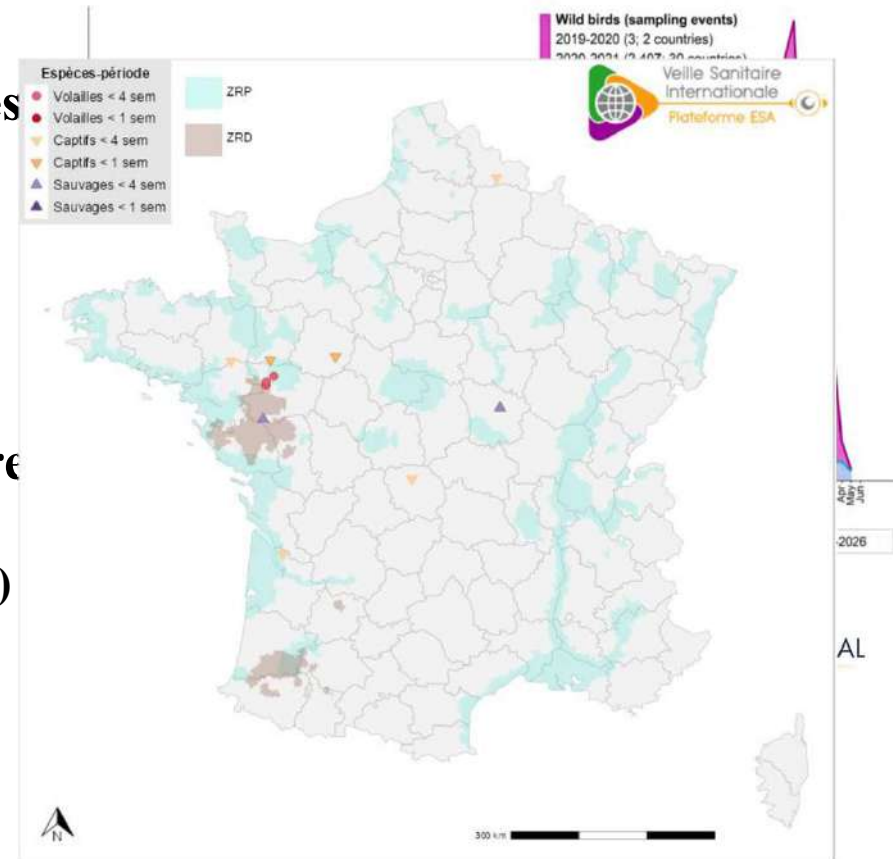
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- **2025-26 season: ↑↑↑ infected migratory bird cases in EU & UK – high environmental pressure**
- **↑ poultry cases**



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 - **↑ poultry cases**
 - France cases: 118 poultry cases (through March 2026)
 - Duck cases: 66 in vaccinated w/majority in > 10 wks old and 20% cases with biosecurity breaches



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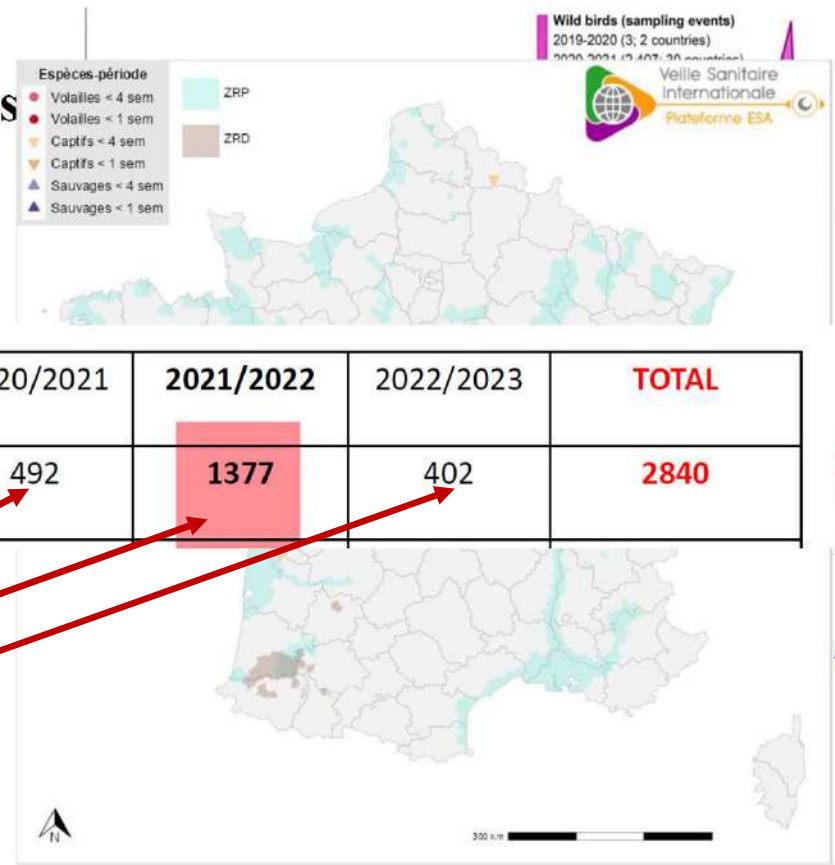
- France cases:

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- 2025-26 cases in - ↑ poul

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Outbreaks poultry	81	488	492	1377	402	2840

- France cases: 118 poultry cases
- Duck cases: 66 in vaccinated w/majority in > 10 wks old and 20% cases with biosecurity breaches



- >90% reduction in H5 2.3.4.4b Gs/GD HPAI outbreaks compared to 2021/2022 peak
- 71-77% reduction in H5 2.3.4.4b Gs/GD HPAI outbreaks compared to 2020-21 & 2022-23

3.4 Vaccination Plans in Development and Review

- **The Netherlands: completed a pilot project in layers → proposed vaccination plan**
 - **rHVT-H5 in hatchery with option of non-replicating vaccine in pullets: good outcomes for primary (rHVT-H5) and prime (rHVT-H5) + HA boost programs, including reduced HPAI transmission**
- **United Kingdom: turkeys – pilot project underway for 24 weeks (ending Fall 2026)**
- **Canada: Pilot in turkeys (2x killed vax; 2027) & layers (rHVT-H5 + killed boost; 3 August start)**
- **Italy: Vaccination plan proposed to start June 2026, but delayed as assess trade issues, logistics of movements with traceability & refinement**
 - **Proposed mandatory in turkeys and layers in Northern Italy, but voluntary in other areas**
 - **Vector vaccine (rHVT-H5) in hatchery and non-replicating boost in the field**
- **USA:**
 - **United Egg Producers – proposed framework for layers to USDA**
 - **National Turkey Federation – vaccination plan developed during 2014-15 outbreak being revisited**
 - **USDA – proposed plan underdevelopment with industry input and review. Pending release?**
- **Additional countries are studying pilot or vaccination plans: Australia (layers), Hungary (ducks and geese), Poland, Denmark (turkeys) & Germany (turkeys)**
- **Discussions: Layer industries in Brazil, Canada, Chile, Colombia and Japan**

4 Post-Vaccination Surveillance

- **EU (EFSA): Updated regulation (2026/1073 of 6 March 2026*) – Summary:**
 - **Emergency Vaccination area for vaccinated flocks:**
 - **Passive surveillance (expected daily mortality is passed) – all dead birds up to 15 per flock**
 - **Active targeted surveillance (Minimum of every 3 weeks) – all dead birds, up to 15 birds, per flock within 48 hours sampling period for detection of HPAI virus in vaccinated flocks (99% probability with 95% confidence interval)**
 - **Emergency Vaccination and Peri-vaccination areas for non-vaccinated flocks:**
 - **Passive surveillance of galliform poultry**
 - **Weekly sampling of all dead birds up to 15 per flock of anseriform poultry**
 - **Preventative vaccination:**
 - **Passive surveillance (event-based surveillance)**
 - **Active targeted surveillance every 30 days: review of health records and testing all dead birds up to 15 (over 48 hour period), or 25% galliform and 50% anseriform poultry vaccinated farms in the zone on 7-day intervals.**
 - **Pools of 5 swabs**

*Based on study: EFSA, Nielsen SS, Alvarez J, Bicout DJ, Calistri P, Canali E, et al. Vaccination of poultry against highly pathogenic avian influenza - Part 2. Surveillance and mitigation measures. EFSA Journal. 2024;22(4):e8755. doi: 10.2903/j.efsa.2024.8755.

4 Impact on Trade

- **WOAH & FAO– when using appropriate surveillance to demonstrate absence of HPAI virus, trade in vaccinated poultry and their products should not be inhibited**
- **French vaccination of *foie gras* and meat ducks since October, 2023:**
 - **No disruption of trade within the EU**
 - **Immediate ban 2023: USA, Canada, Japan, Thailand, United Kingdom and Chile**
 - **Progress to date:**
 - **United Kingdom – 2025 resolved**
 - **USA – early 2025 - Trade allowed except vaccinated birds and their products**
 - **Canada – early 2025 - Trade allowed except vaccinated birds and their products**
 - **Chile – Resolved**
 - **Japan – Ban continues except treated products to inactivated virus**
 - **Thailand – On-going discussions**

Policy brief
**Avian influenza vaccination:
why it should not be a barrier to safe trade**
September 2023



5 Next Steps

- **WOAH: Developing the guidelines for HPAI surveillance in vaccinated poultry populations**
 - Multilayered, efficient, and cost-effective
 - Released April 2027
- **12th International Symposium on Avian Influenza – Barcelona, Spain, 7-10 June 2027:**
½ day workshop on HPAI Vaccination, Surveillance and Trade

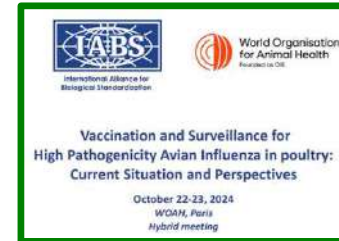


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6 Conclusions: Global Solutions for HPAI Vaccination of Poultry

- The WOAHA Code and Manual support vaccination as a control tool, and supports trade in vaccinated poultry in the presence of **appropriate surveillance** to demonstrate freedom of HPAI virus infection
- Multiple HIC countries are implementing, planning or considering pilot or field vaccination programs
- Appropriate surveillance of vaccinated poultry should be risk-based, targeted, multi-layered and primarily virological in nature (i.e. find active infections), for assessing vaccination success and to inform changes/improvements in vaccination program
 - Passive (event-based) and active targeted surveillance: routine dead bird testing, but if not available, clinically ill birds, testing via qRT-PCR (5 swab pools in EU, 11 swab pools in USA)
 - Lack of general utility of sampling healthy vaccinated chickens
 - Surveillance must be sensitive, cost-effective and efficient



Thank you for your attention!

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2023 - present

