

Léni CORRAND
ABIPOLE Veterinary Practice
(Arzacq - FRANCE)



Sustainability of duck industry in Europe in the face of Avian Influenza outbreaks

focus on French experience

BVPA Spring Meeting
Harrogate ; March 2022



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Member PVSG EU

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ABIPOLE Vet Practice

- ✓ Over 30 vets specialized in farm & small animals
- ✓ 7 dedicated poultry veterinarians

ducks / broilers / layers (strong FR trad)
breeders / GP's
meat inspection consultancy

in-house Bio Chêne Vert laboratory
(necropsy, sero, bacterio, PCR, hygiene, salmo)



None !



Duck farming and IA outbreaks

What have we learned?

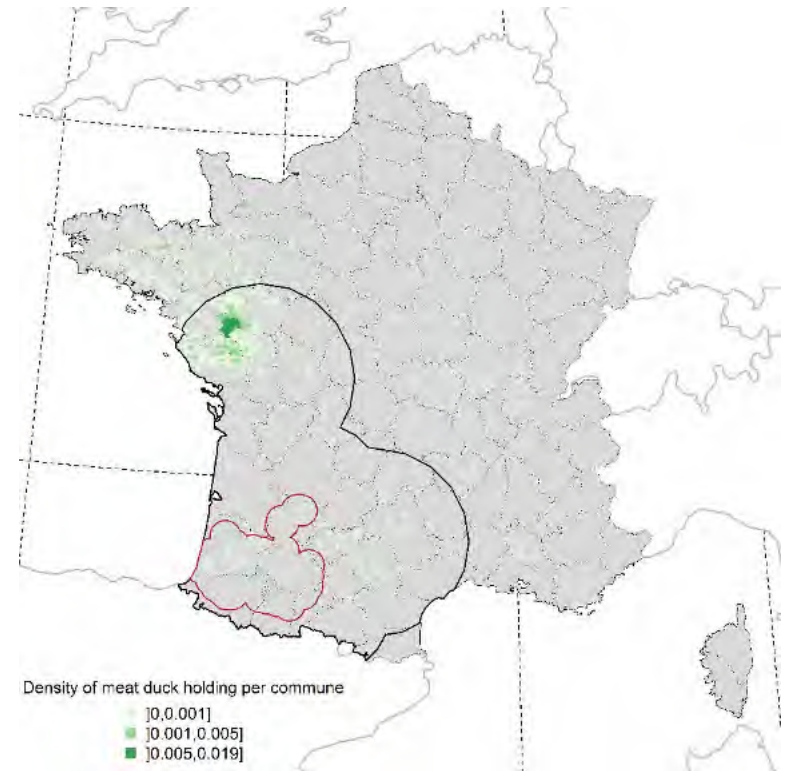
Can we make it sustainable?

13. Duck production in EU countries ('000 tons carcass weight)

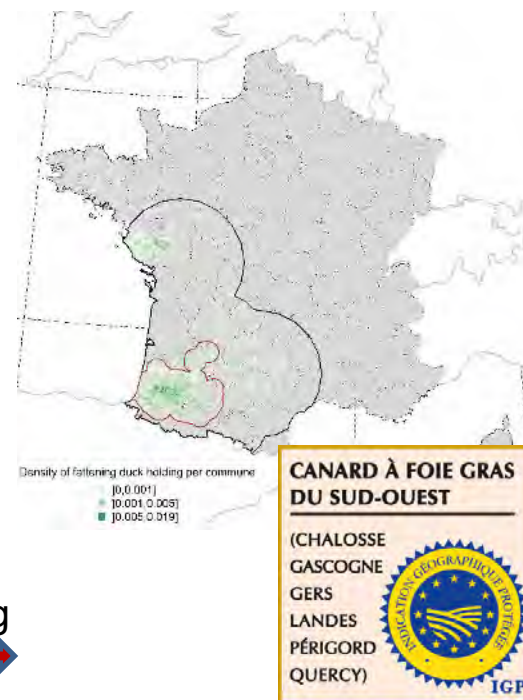
	2015	2016	2017	2018	2019	2020
Austria	0,1	0,1	0,1	0,4	0,5	0,5
Belgium / Luxembourg	0,1	0,1	0,1	0,1	0,1	0,1
Bulgaria	20,3	22,5	19,6	23,1	19,8	19,0
Cyprus	0,0	0,0	0,0	0,0	0,0	0,0
Czech Republic	8	9	11	12	110	11
Denmark	4,0	1,0	1,8	1,2	1,5	1,5
Estonia	-	-	-	-	-	-
Finland	0,0	0,0	0,0	0,0	0,0	0,0
France	231,6	206,2	203,6	227,3	226,3	220,7
Germany	50,3	48,5	40,5	41,4	41,3	25,9
Greece	0,1	0,1	0,1	0,1	0,1	0,1
Hungary	84	80	68	123	118	89
Ireland	5,1	5,2	5,8	5,8	4,5	5,0
Italy	9,0	6,9	5,5	6,0	4,0	4,0
Latvia	-	-	-	-	-	-
Lithuania	0	0	0	0	0	0
Malta	-	-	-	-	-	-
Netherlands	16,0	16,0	18,0	19,0	-	-
Poland	45	59	48	45	52	53
Portugal	9,9	10,0	10,1	10,6	10,6	10,0
Romania	-	-	-	-	-	-
Slovakia	0	0	0	0	1	1
Slovenia	-	-	-	-	-	-
Spain	2,0	4,1	3,7	3,2	4,6	4,5
Sweden	0,0	0,0	0,0	0,0	0,0	0,0
EU 27	523,0	510,0	475,0	555,0	550,0	500,0
United Kingdom	29,2	30,0	30,6	30,4	29,9	-
EU 28	552,2	540,0	505,6	585,4	579,9	-
World	4.305,7	4.402,9	4.361,4	4.801,0	4.858,1	-

<https://avec-poultry.eu/>

Roast duck (muscovy, pekin)



Fattened duck (mule)



Growing farm (12 weeks)

Fattening

Brooding
(3 weeks)

Free-range (access to shed if needed)
(9 weeks)

(10-12
days)

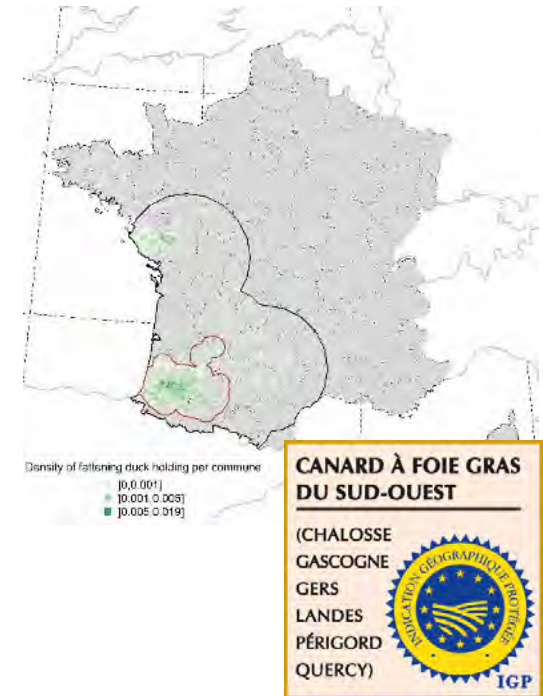
Transport
(mostly diff. farm)



Soigner Prévenir Conseiller



Fattened duck (mule)



Diversity!



Waterfowl and AI outbreaks

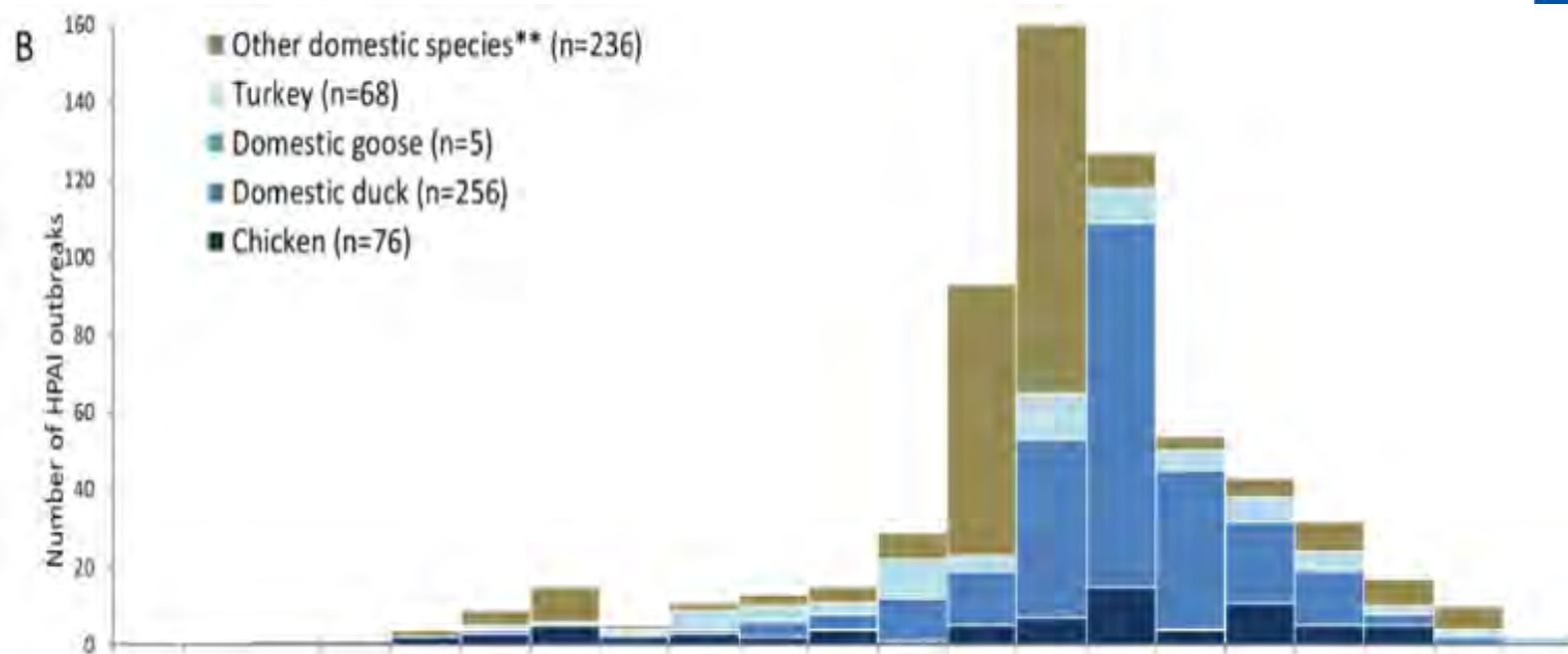


Figure 4: Distribution of total number of HPAI virus detections reported in Europe by week of suspicion (dates indicate the first day of the week), (B) affected poultry categories (n=641)
5 October 2020 – 23 February 2021

EFSA Journal 2021;19(3): 6497

Waterfowl and AI outbreaks

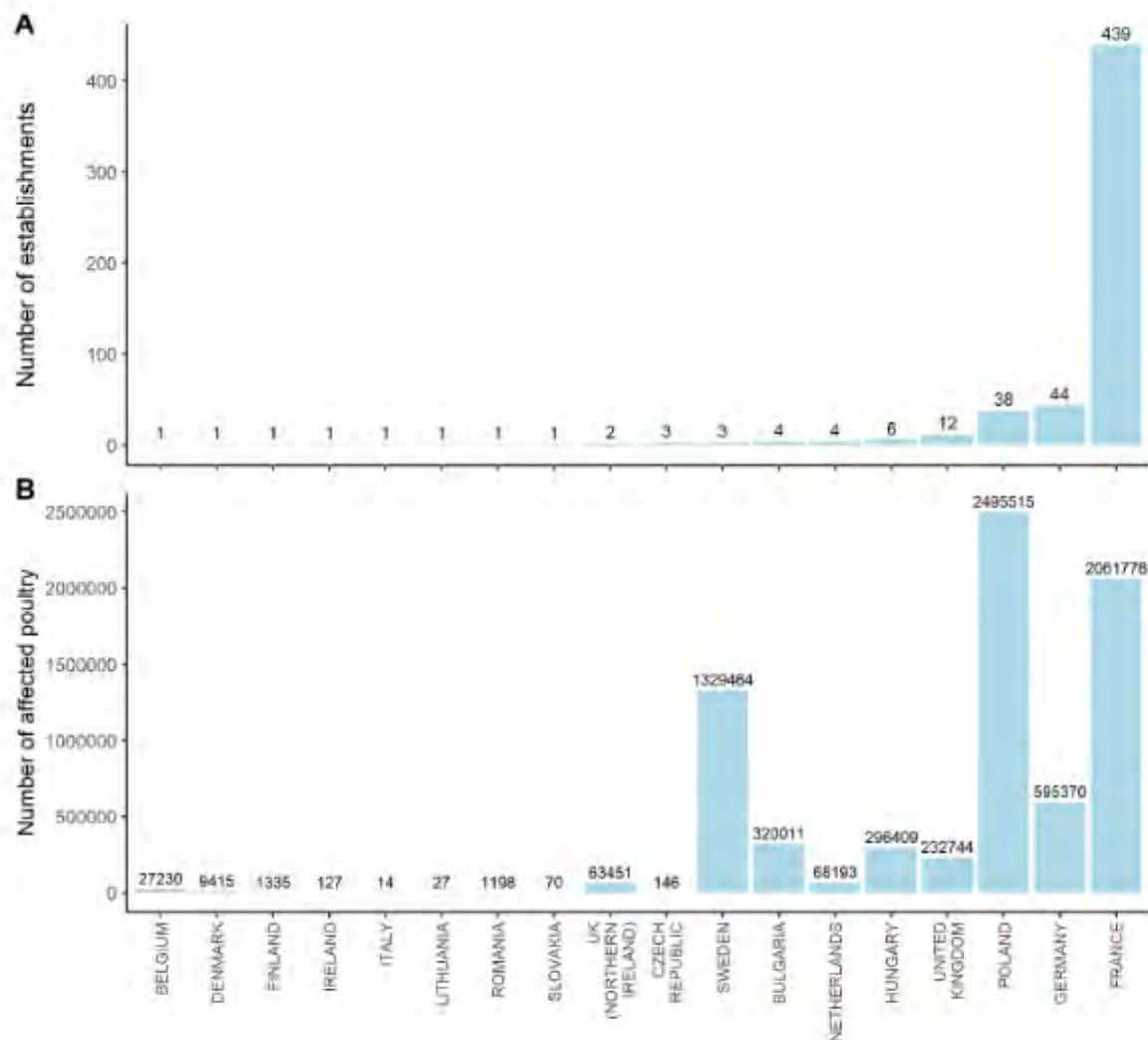


Figure 8: Number of establishments (A) and domestic birds (poultry) (B) affected by HPAI in the EU between 26 November 2020 and 11 February 2021.

EFSA Journal
2021;19(3): 6497

2015-2016

H5N1, H5N2, H5N9
France (LP → HP)
81 notified outbreaks
SW only



2016-2017

H5N8 clade 2.3.4.4
Europe
485 notified outbreaks
Foie-gras duck farms +++
SW only



2020-2021

H5N8 clade 2.3.4.4
Europe
439 notified outbreaks
Foie-gras duck farms +++
SW mostly



2021-2022 (ongoing)

H5N1 clade 2.3.4.4
Europe
> 445 notified outbreaks
Ducks & Gallinaceous
SW & W (> 3M outb. + 3M prevent. cull)



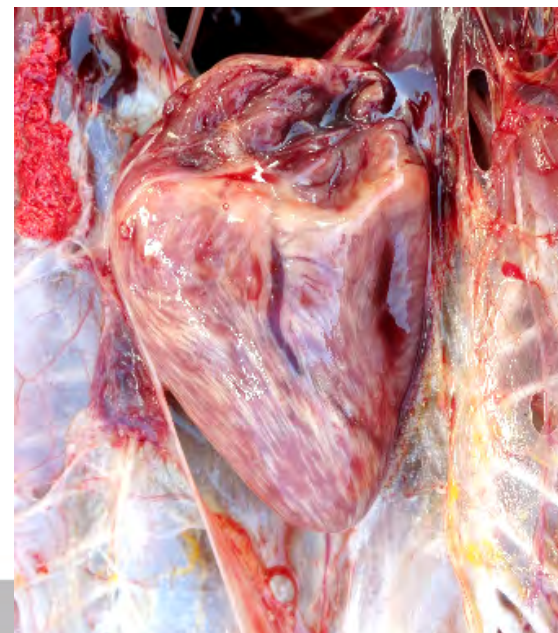


Waterfowl and AI outbreaks



Variable patho. findings

H5N8
2.3.4.4.b
2017

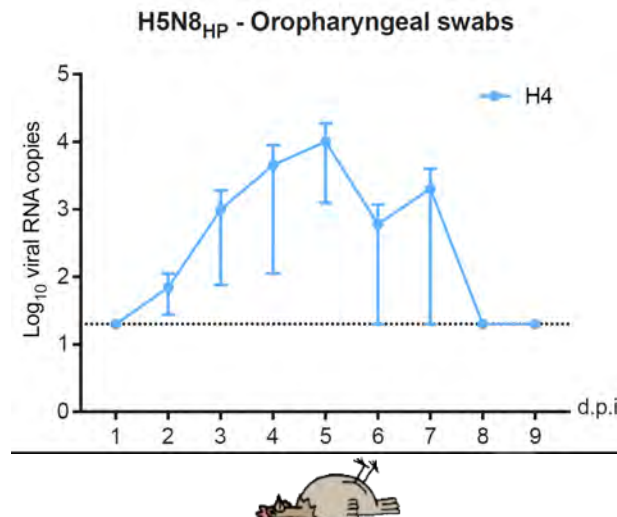
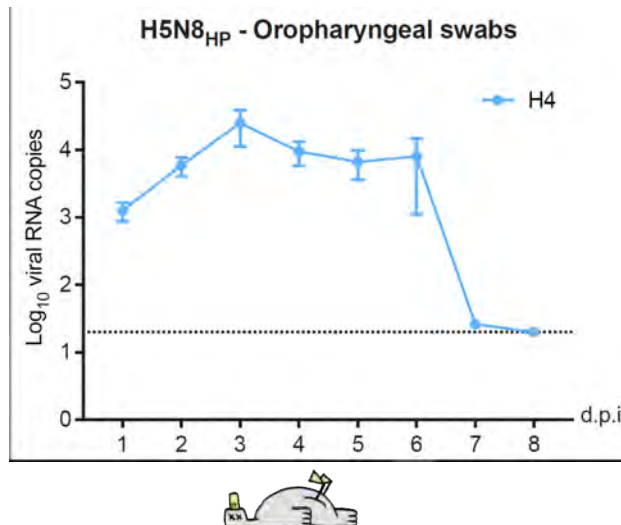


AI & ducks: a love story!

Table 4. An indication of AIV shedding length in days in multiple poultry species.

Pathotype	Poultry Species	Length of Respiratory Virus Shedding (Days)		Length of Cloacal Virus Shedding (Days)	
		Mean	Range	Mean	Range
HPAI	Chicken	2.6	(1.1–6.5)	2.5	(1.0–6.2)
	Duck	6.9	(2.8–17.1)	6.6	(2.7–16.3)

*Germeraad et al.
Viruses. 2019*

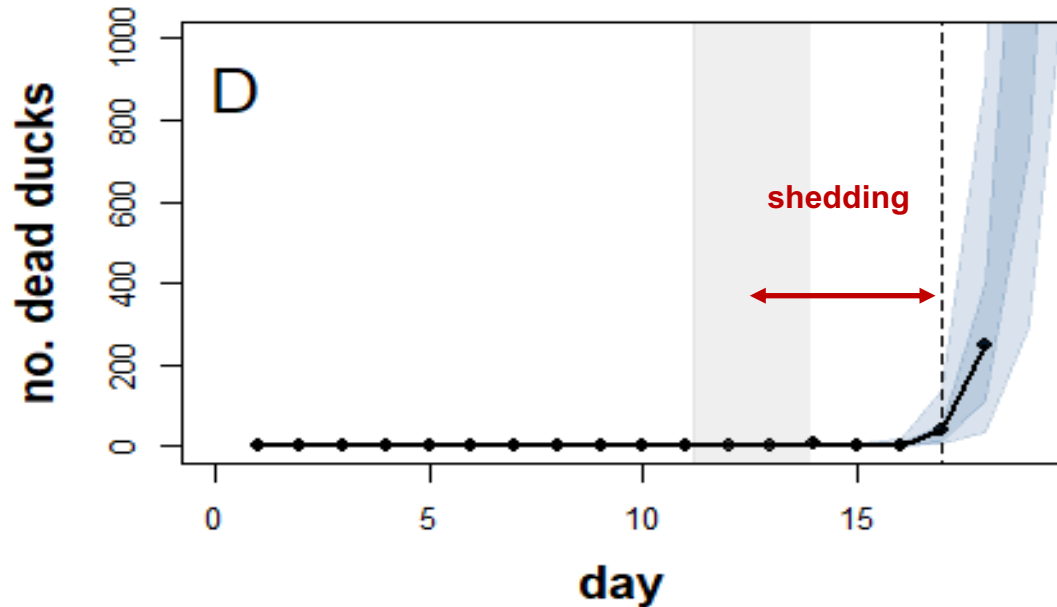
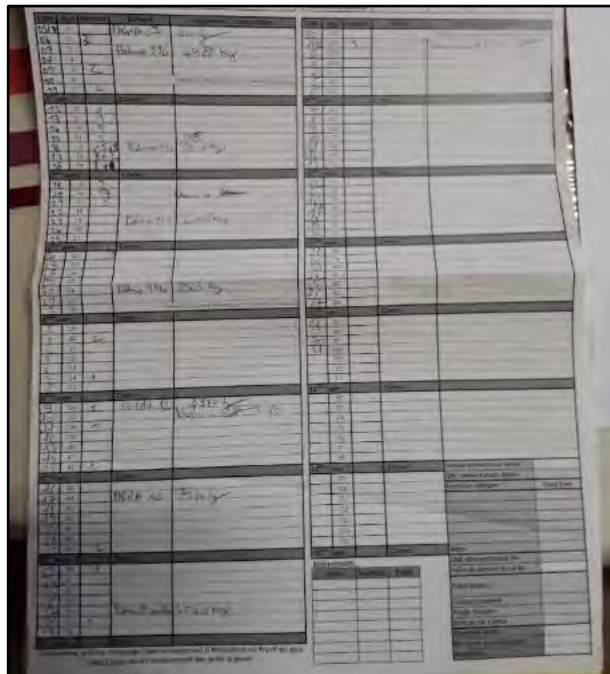


*Bessière et al.
J Virol. 2022*

Within-farm transmission dynamics

Vergne et al., 2021

envt
école
nationale
vétérinaire
toulouse



Very short latent period (<1 day) and **fast transmission within farm**

Farms became a **strong source of infection** even before the first deaths

Bloody ducks!

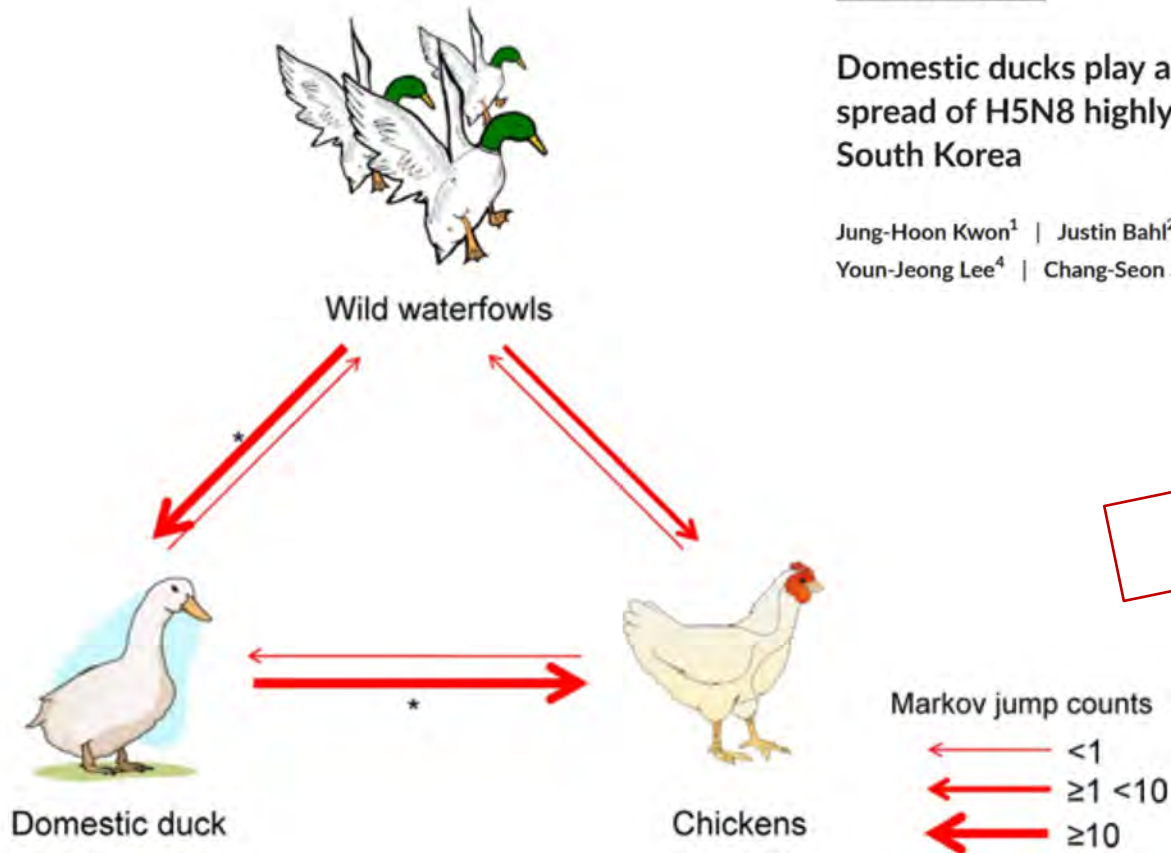
Received: 1 June 2019 | Revised: 5 September 2019 | Accepted: 25 October 2019
DOI: 10.1111/tbed.13406

ORIGINAL ARTICLE

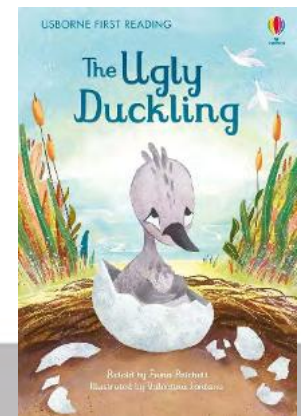
Transboundary and Emerging Diseases | WI

Domestic ducks play a major role in the maintenance and spread of H5N8 highly pathogenic avian influenza viruses in South Korea

Jung-Hoon Kwon¹ | Justin Bahl^{2,3} | David E. Swayne¹ | Yu-Na Lee⁴ |
Youn-Jeong Lee⁴ | Chang-Seon Song⁵ | Dong-Hun Lee⁶ 



Poultry sectors clash



Duck farming and IA outbreaks



What have we learned?

Can we make it sustainable?



2015-2016

H5N1, H5N2, H5N9
LP → HP
SW only

Ignorance crisis!



- ✓ Multi age / species → single age / species
- ✓ Improvement Clean.& Disinf.
- ✓ Poultry houses major changes
- ✓ Biosecurity audits & education
- ✓ Professional database of poultry holdings





2015-2016

H5N1, H5N2, H5N9
LP → HP
SW only

Ignorance crisis!



What changed between 2016 and 2020?

Biosecurity	Compliance in 2015	Compliance in 2018
Farm registry	22%	88%
Change of boots	20%	83%
Separation of the rendering area	46%	84%
Area for cleaning vehicles	22%	83%
Non use of an ante-room	37%	0%
Etc.		

Delpont et al., 2018



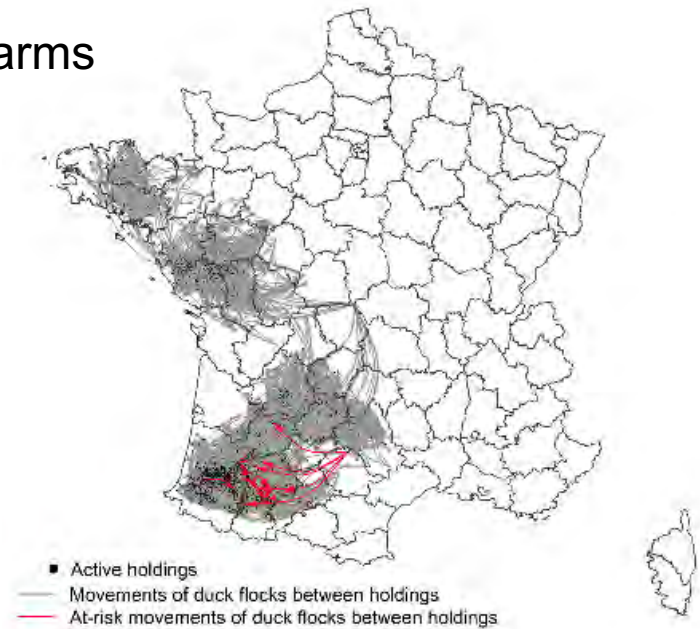


2016-2017

H5N8 clade 2.3.4.4
SW only

Transport crisis!

- ✓ Transport of asymptomatic birds to forcefeeding farms
- ✓ Secure (PCR) before movements
- ✓ Clean.& Disinf. cages and trucks
- ✓ Secure catching gangs?



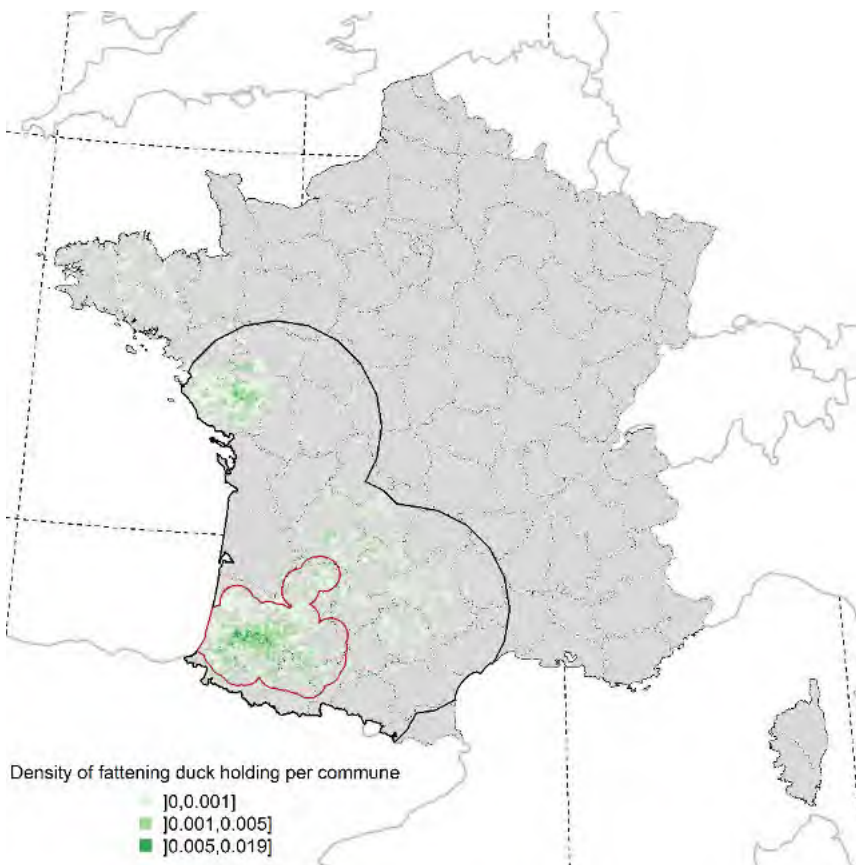
Guinat et al., 2020



2016-2017

H5N8 clade 2.3.4.4
SW only

Density crisis!



CANARD À FOIE GRAS DU SUD-OUEST

(CHALOSSE
GASCOGNE
GERS
LANDES
PÉRIGORD
QUERCY)

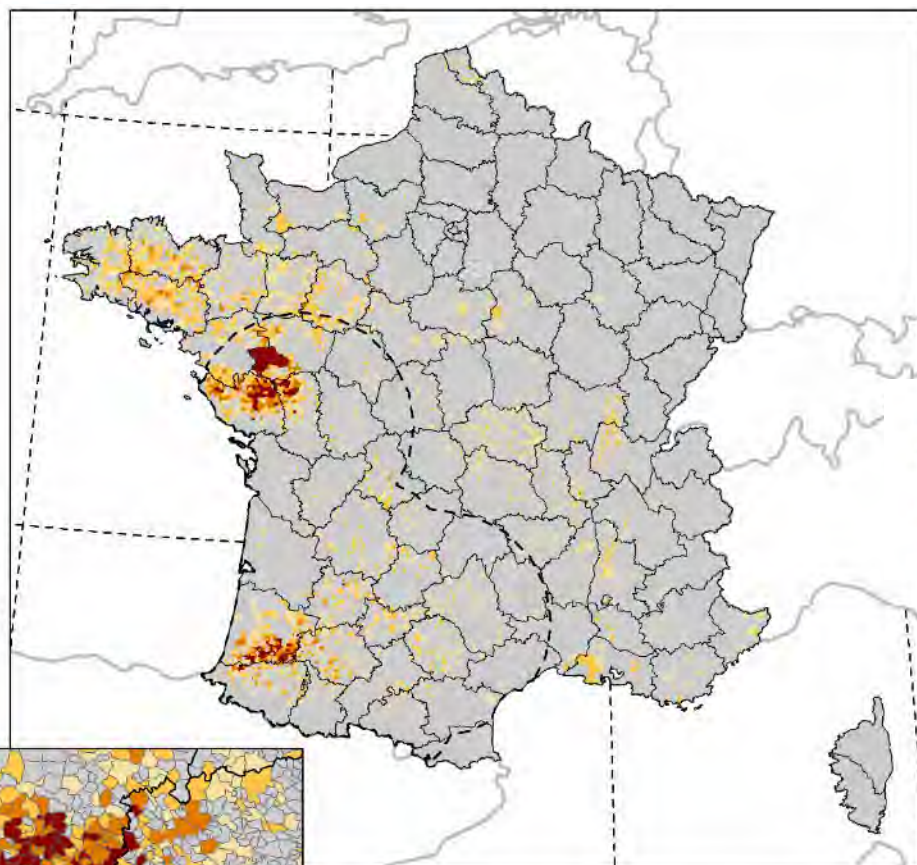




2016-2017

H5N8 clade 2.3.4.4
SW only

Density crisis!



CANARD À FOIE GRAS
DU SUD-OUEST

(CHALOSSE
GASCOGNE
GERS
LANDES
PÉRIGORD
QUERCY)



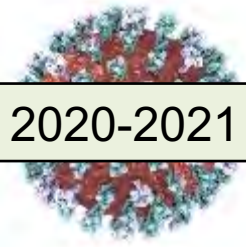
Duck production systems and highly pathogenic avian influenza H5N8 in France, 2016–2017

C. Guinat , J. Artois, A. Bronner, J. L. Guérin, M. Gilbert & M. C. Paul

Scientific Reports **9**, Article number: 6177 (2019) | [Cite this article](#)

Probability of having at least one HPAI-H5N8 outbreak





2020-2021

H5N8 clade 2.3.4.4
SW mainly

Confinement crisis!



- ✓ Tolerance for <3200 ducks outdoor
 - Assumed first wild bird contamination, then local spread farm to farm
- ✓ Tension between large and small scale farmers





2020-2021

H5N8 clade 2.3.4.4
SW mainly

Culling crisis!

✓ Troubles with euthanasia

- On-site CO₂ killing
- Delay? Flexibility (small farms)?
- Need for local vets
- Airsols generated?



✓ Preventive stamping out of domestic ducks

- Late decision by authorities: 0km then 3km then 5km
- Dedicated slaughterhouses (150.000 ducks/day)

✓ Preventive stamping out FR chickens

- Late decision: 0km then 1km

✓ Resistance of some farmers!

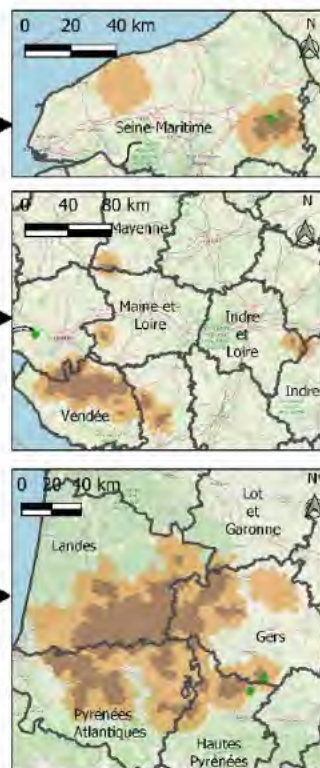




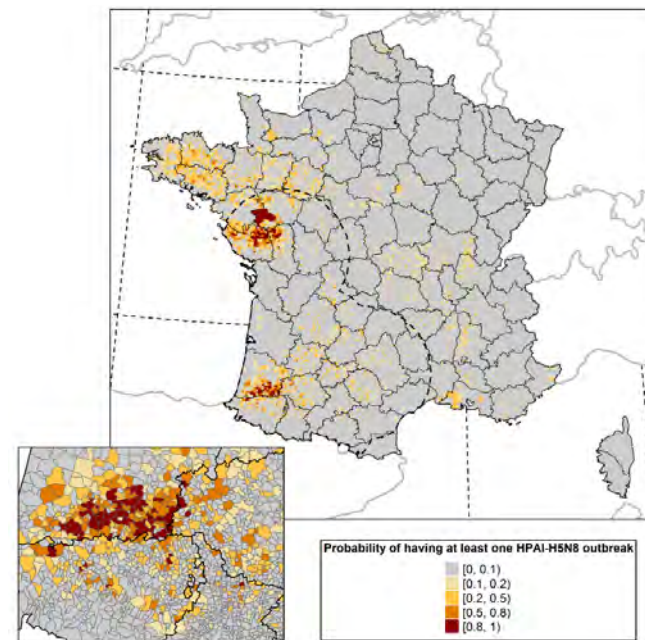
2021-2022

H5N1 clade 2.3.4.4
SW & W

Global crisis!



Prediction (Guinat et al., 2020)



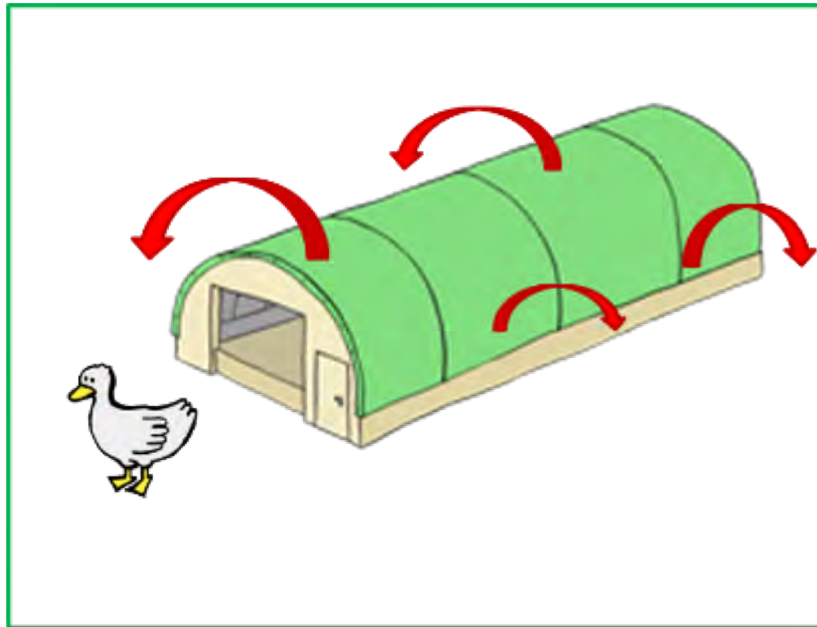


2021-2022

H5N1 clade 2.3.4.4
SW & W

Airsols crisis!

- ✓ Rapid spread despite confinement
 - Airsols spread?



*Viral loads very high
Dust and aerosols highly positive*





2021-2022

H5N1 clade 2.3.4.4
SW & W

Bedding crisis!



- ✓ Rapid spread despite confinement
 - Airsols spread?
 - Trouble with straw bedding



Soigner Prévenir Conseiller



2021-2022

H5N1 clade 2.3.4.4
SW & W

Despair crisis!

- ✓ Despite confinement
- ✓ Despite reduction of nb ducks raised
- ✓ Despite biosecurity improvement
- ✓ Despite transport securing
- ✓ Despite fast response from all
(farmers, vets, industry, labs, authorities)
- ✓ Despite mass culling (fast and strong)

>6M birds culled...again!

Genetic losses

Industry bankrupt?
(direct & indirect export impact)

Cost !!

Mental health damage?

Animal welfare?

Environmental impact?

Duck farming and IA outbreaks

What have we learned?



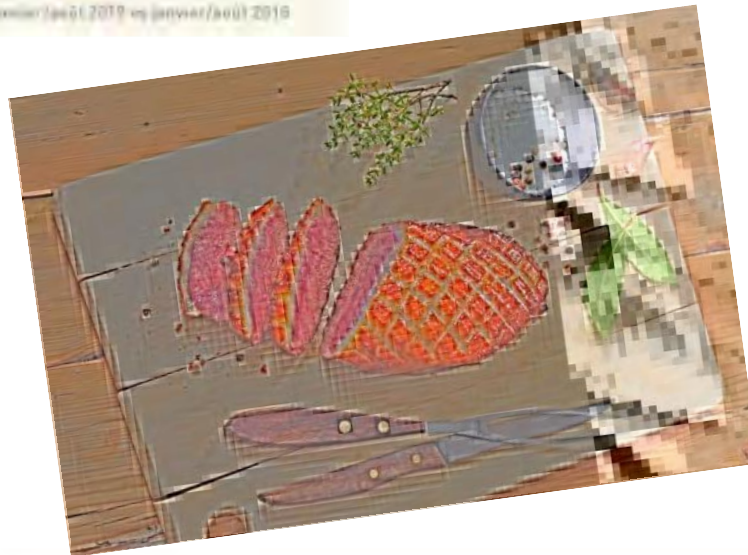
Can we make it sustainable?

A consumer's demand for duck meat...

2019 : les ventes de Foie Gras
toujours à la hausse (8 premiers mois)



Source : IRI H&M et SM - cumul janvier/août 2019 vs janvier/août 2018



2019 : le boom des ventes
de Magret se poursuit (8 premiers mois)



Source : Kantar Worldpanel, tous magasins confondus
janv./août 2019 vs janv./août 2018

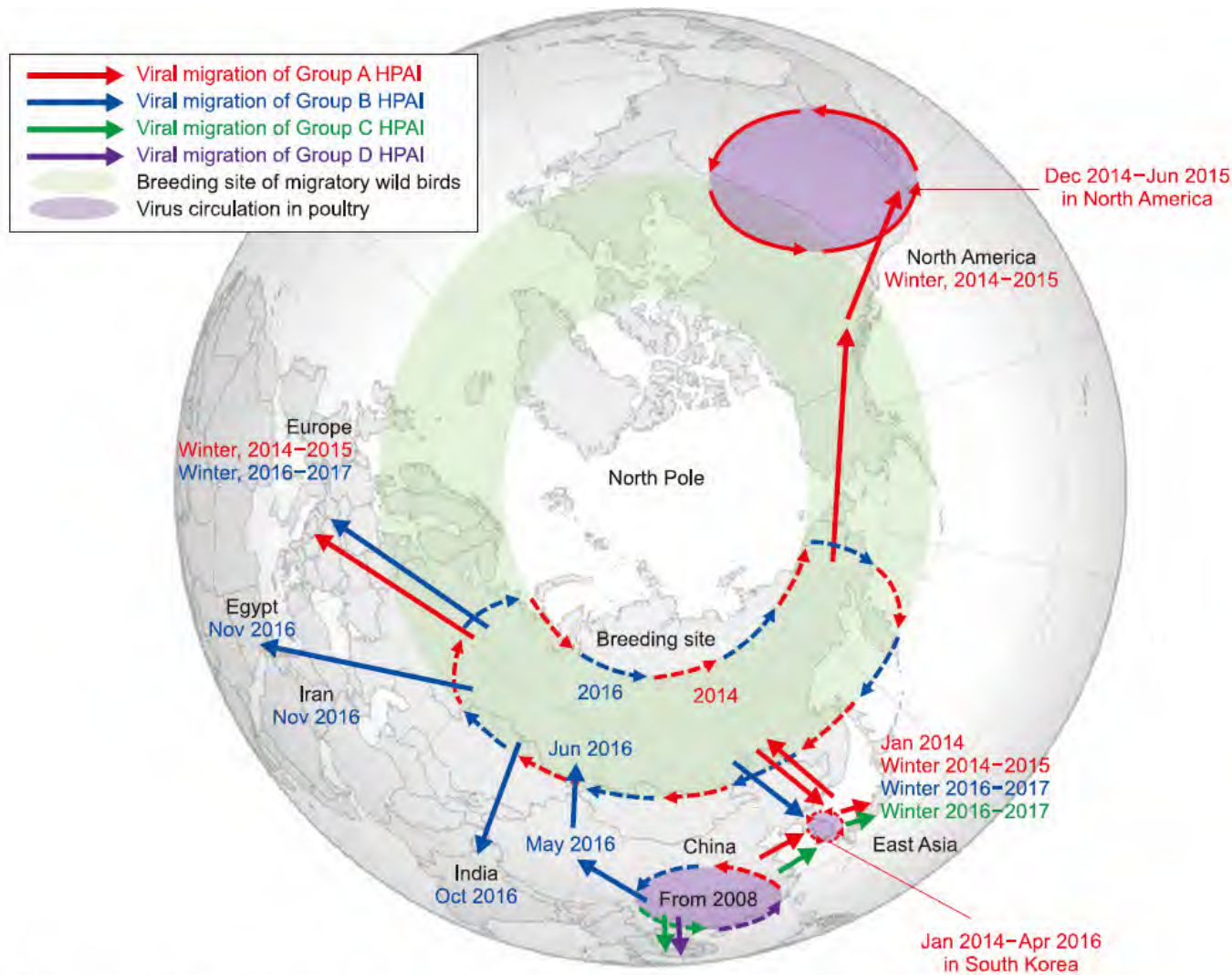
...and renowned genetics companies...



GRIMAUD FRÈRES®
SÉLECTION **LA PASSION
DU BIEN-FAIRE**



... but a long term HPAI risk!



Lee et al.
J Vet Sci. 2017

Fig. 1. Geographic map showing movement patterns of highly pathogenic avian influenza (HPAI) clade 2.3.4.4 viruses.

Don't Give Up!



- ✓ Improve & maintain biosecurity standards

Determinants of biosecurity practices in French duck farms after a H5N8 Highly Pathogenic Avian Influenza epidemic: The effect of farmer knowledge, attitudes and personality traits

Mattias Delpont ¹, Manon Racicot ², André Durivage ³, Lucie Fornili ¹, Jean-Luc Guerin ¹, Jean-Pierre Vaillancourt ⁴, Mathilde C Paul ¹

Affiliations + expand

PMID: 31960594 DOI: [10.1111/tbed.13462](https://doi.org/10.1111/tbed.13462)

Abstract

Biosecurity is crucial for infectious disease prevention, more importantly in the absence of vaccination. The need for improving the implementation of biosecurity practices was highlighted in French duck farms following the 2016-2017 H5N8 Highly Pathogenic Avian Influenza (HPAI) epidemic. Farmers

Delpont et al., 2018

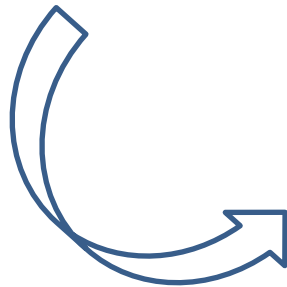


Don't Give Up!

- ✓ Improve & maintain biosecurity standards

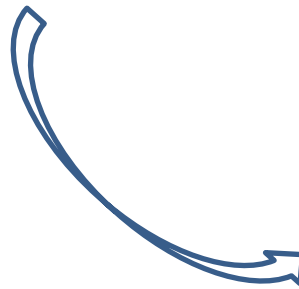


Acceptable?



Don't Give Up!

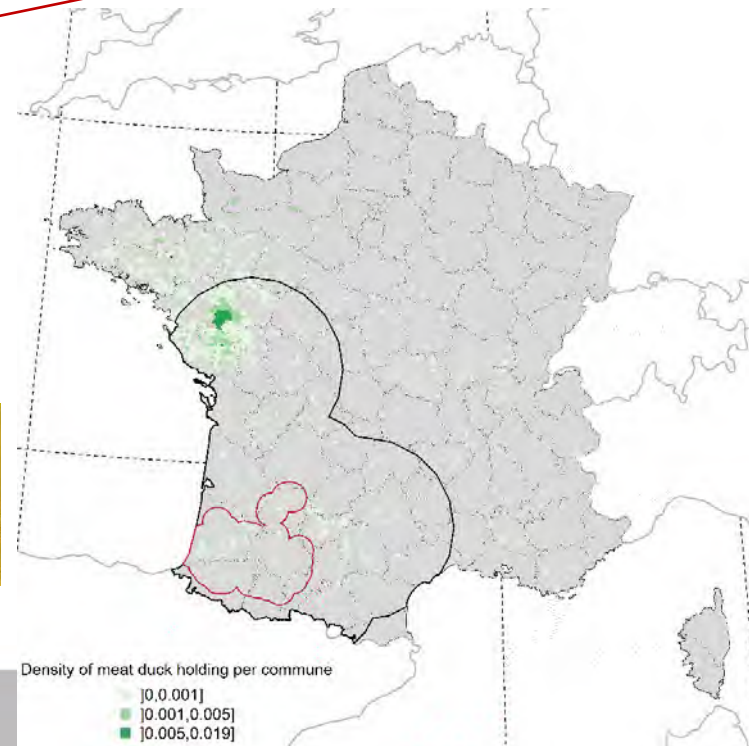
- ✓ Improve & maintain biosecurity standards



Compatible?

Don't Give Up!

- ✓ Improve & maintain biosecurity standards
- ✓ Restructure duck industry
 - Reduce placement?
 - Stop winter production?
 - Relocation of farms?
 - Reduce birds movements?



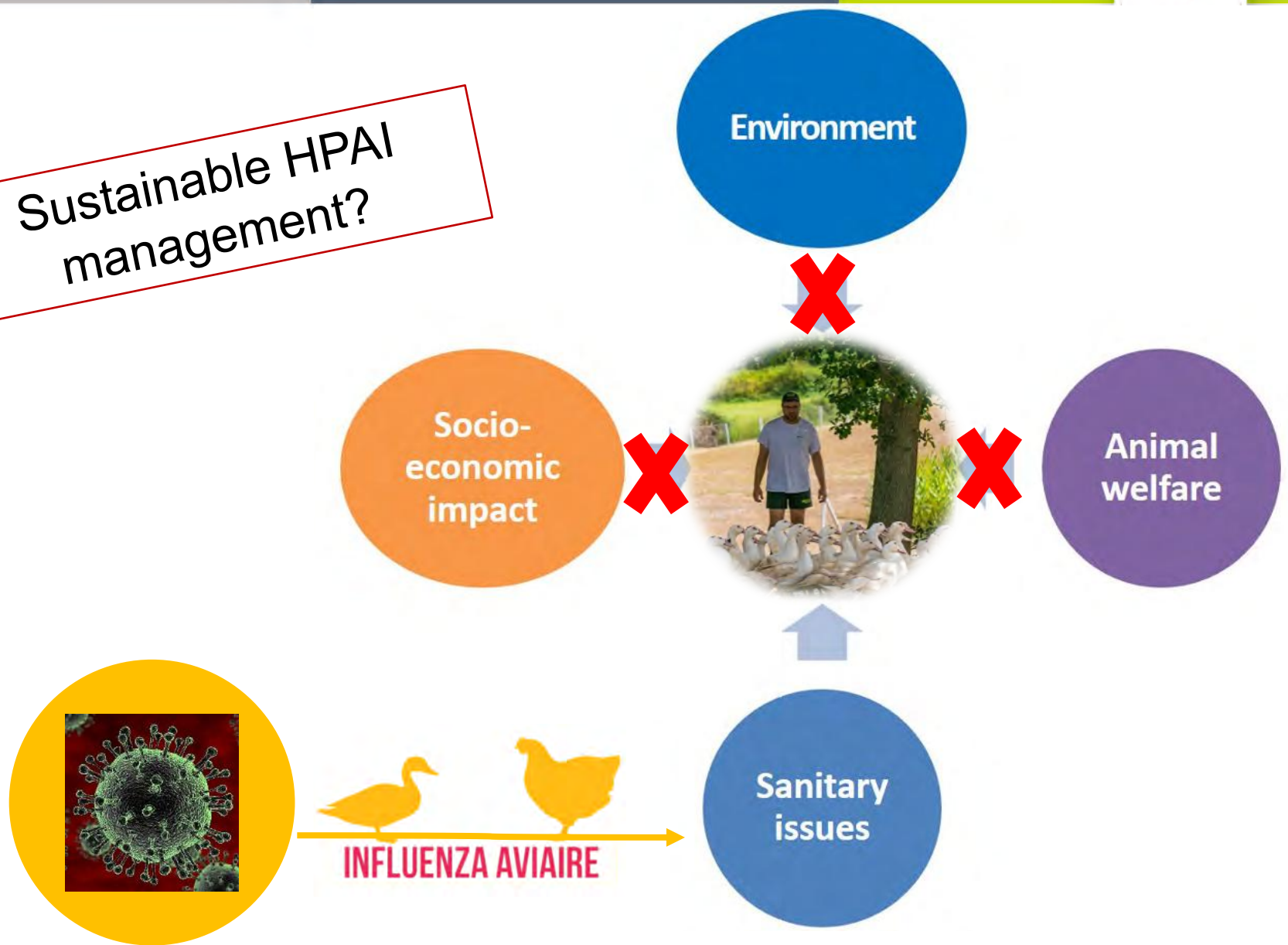
Don't Give Up!

- ✓ Improve & maintain biosecurity standards
- ✓ Restructure duck industry
 - Reduce placement?
 - Stop winter production?
 - Relocation of farm?
 - Reduce birds movements?
- ✓ Act faster/stronger against AI
 - Diagnosis improvement?
 - Greater use of chemicals?
 - Larger preventive culling?

Sustainable?



Sustainable HPAI
management?



Vaccination?



En ce moment

Covid-19

Guerre en Ukraine

Présidentielle 2022

Salon de l'agriculture

Le Lab Présidentielle

Accueil / Santé / Grippe aviaire

Grippe aviaire : « pas d'autre solution à terme » que le vaccin, pour le ministre de l'Agriculture

Julien Denormandie a défendu la vaccination contre la grippe aviaire, ce vendredi 7 janvier, alors que plusieurs foyers se sont déclarés, notamment dans les Landes.



Ce vendredi soir, il y a 80 foyers d'influenza aviaire hautement pathogène dans des élevages français. | JÉRÔME FOUQUET / OUEST-FRANCE

“no other solution in the long term than to have vaccination”

Jan 7th 2022

Soigner Prévenir Conseiller

Irish Examiner

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French push for Avian Influenza vaccines



Ducks slaughtered due to the avian flu outbreak at a farm in Lohitzun-Oyhercq, southwestern France last

Vaccination trials?

Official field experiment of vaccines, under ministry supervision

Coordination scientific authorities, April/June

2 “candidates” (mRNA & sub-unit) ; ducks only

Field vaccination then experimental unit challenges

- Feasibility & vaccine response monitoring
- Clinical protection & viral shedding
- DIVA strategy

“experiment” → not food chain ; avoid export restrictions

If encouraging results

→ What species ? Period ? Compartment ? Region ? Export impact ?

→ Biosecurity +++ ; surveillance +++



None ?



outsourcing
wildlife
destroy labor
immunity
laboratory
endemic
seasonal
biosecurity
testing
welfare
opinion
reduction
impact
chemicals
confinement
unsustainable
culling
sustainable
relocation