Food and Agriculture Organization of the United Nations

SUSTAINABLE DEVELOPMENT GOALS

GF-TADs, 13th November 2022

Preliminary results from qualitative risk analysis on avian influenza (AI) in the Americas – Actions to respond and prevent AI.

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Context – H5 HPAI introduction and spread in the Americas

December 2021: H5N1 HPAI detected in Canada in wild and domestic birds

January 2022: H5N1 HPAI virus detected in an American wigeon in USA

Spread widely in wild birds during 2022: **>100 different species** and **~5500 cases**

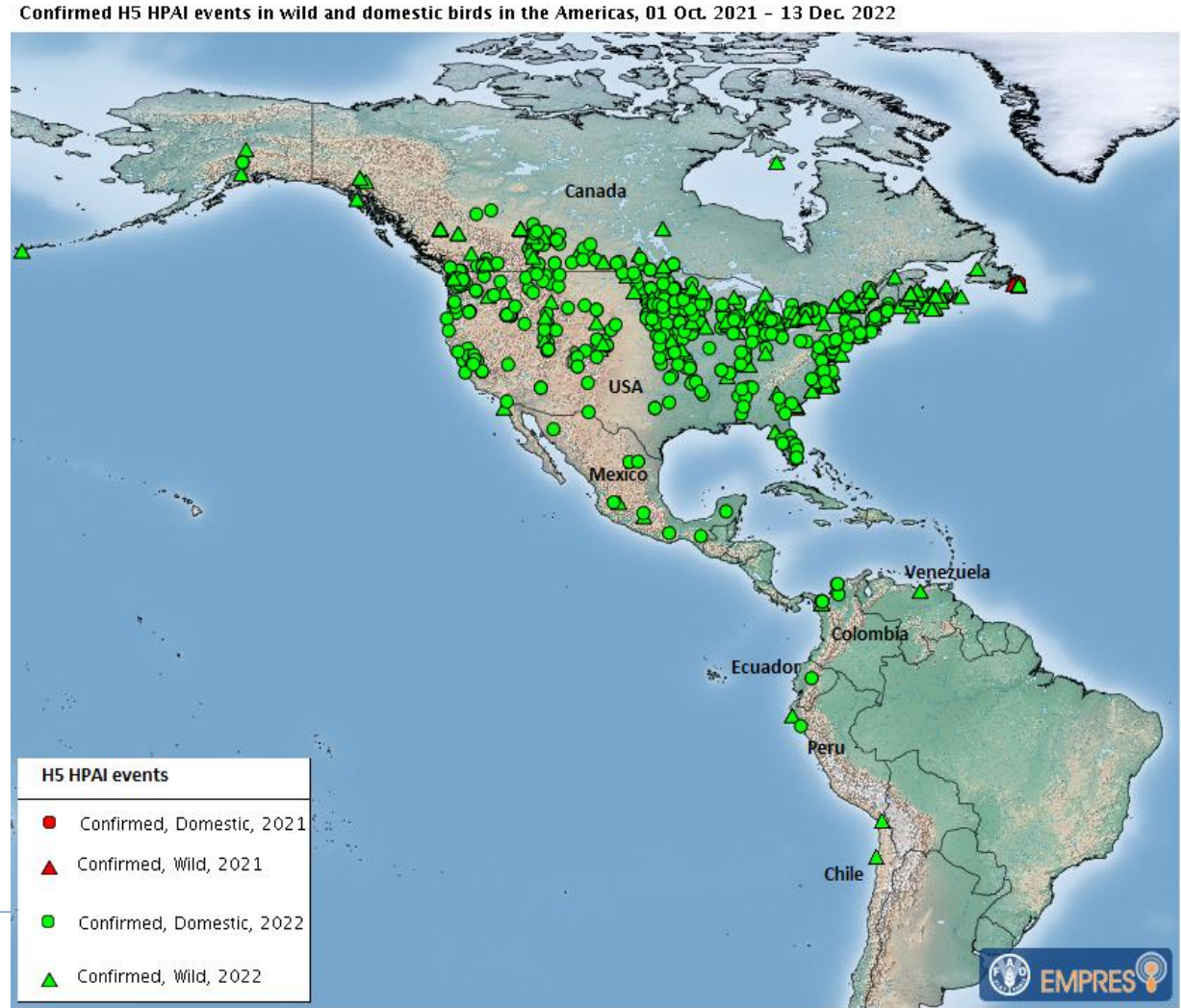
Hundreds of poultry farms affected in Canada (155) and USA (620)

>100 events in mammals

More than 50 million birds culled!

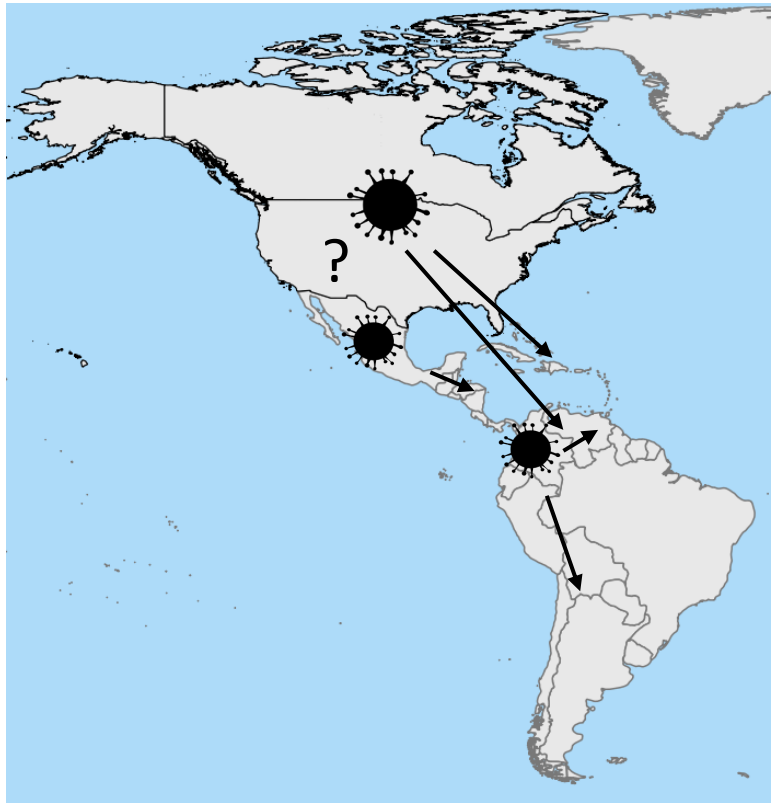
September – February = **High-risk period** for countries/territories along migratory pathways

FAO HPAI alert to CVOs in the Americas in March and September 2022



Qualitative risk assessment scope & methodology (1/2)

- **Risk**: H5 HPAI virus introduction from affected countries to non-affected countries and territories within the Americas
- **Provide a set of recommendations** depending on the risk
- **Self-assessment** of countries/territories for HPAI preparedness, prevention and control
- **Targeted region**: Americas – 35 countries and 18 territories
- **Period covered**: December 2022 – February 2023
- **Introduction** = Entry x Exposure
- Address the **impact of H5 HPAI** introduction



Qualitative risk assessment methodology (2/2)

- 5 questions addressing likelihood of **entry** through **5 key risk pathways**
- 1 question addressing likelihood of **exposure**
- **Data sources**:
  - 58 question survey sent to countries & territories on HPAI risk factors + a brief capacity self-assessment
  - Desktop research (scientific publications, websites [e.g. USDA, CFIA, ebird], reports…)
- **5 levels of likelihood** (negligible to high)
- **3 levels of uncertainty** (low, moderate, high)

What is the likelihood of H5 HPAI virus entering non-affected countries/territories from affected countries in the Americas through…?

Q.1 Live poultry trade

Q.2. Poultry product imports

Q.3. Wild bird movements

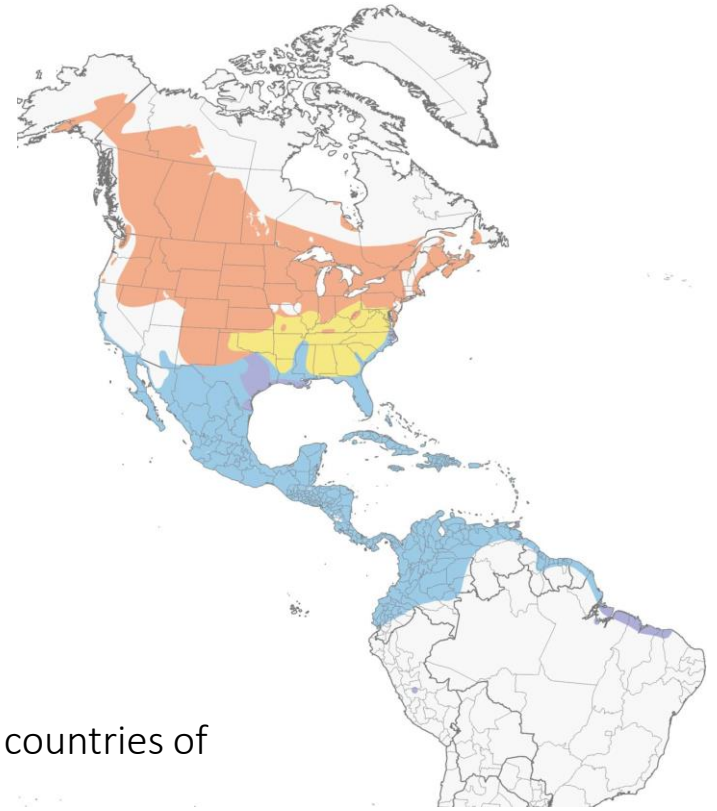
Q.4. Fomites

Q.5. Feed of poultry origin

Results – Likelihood of entry of H5 HPAI virus from North America to non-affected countries/territories

Based on 21/31 responses on the questionnaire and various sources including data on trade, bird migration, prevention and control measures in place, among others.

Risk Pathways							
Likelihood of entry	**Live poultry trade**		**Poultry products trade**		**Wild bird movements**	**Fomites**	**Poultry-origin feed**
	Formal	Informal	Formal	Informal			
Highest level	Moderate	Moderate	Low	Moderate	High	Low	Very low
Lowest level	Very low	Very low	Negligible	Low	Low	Negligible	Negligible
Uncertainty	Low	High	Low	High	High	Moderate	Low



Blue-winged teal (*Spatula discors*) distribution map.
Blue = non-breeding range

Highest likelihood of entry = **High through wild bird movements** for Central America countries + Northern countries of South America and Cuba, Puerto Rico, Haiti, the Dominican Republic.

Wild bird movements = very important risk pathway and hard to control

Formal trade of commodities present lower likelihoods given the current regulatory frameworks in place.

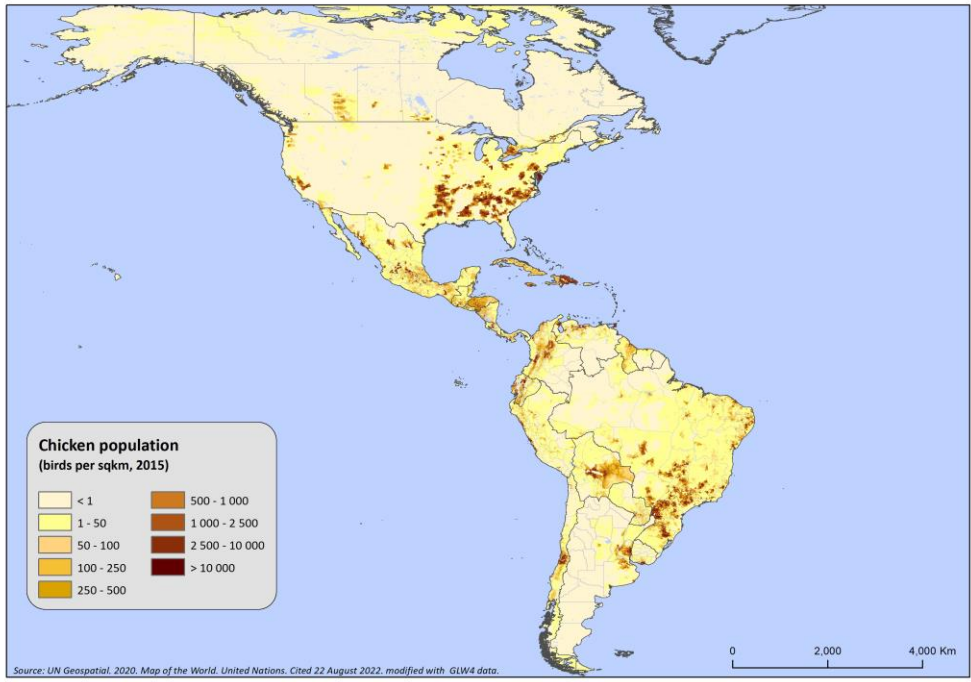
Informal trade has equal or higher likelihoods of entry than formal trade, with higher uncertainty **given lack of evidence**.

Likelihood of exposure

Should H5 HPAI virus enter an unaffected country or territory in the Americas, how likely are susceptible hosts to be exposed to the virus?

Moderate to high with **moderate uncertainty** for countries/territories with:

1. Moderate/high numbers of domestic birds (based on GLW model);
2. Presence of wild bird congregation sites
3. High proportion (above 50 percent) of domestic birds kept in low biosecurity holdings (e.g. backyard and smallholder farms);
4. Low biosecurity practices predominant in the poultry sector, linked to high number of small holdings;
5. Lack of qualified human resources for wild bird surveillance
6. AI surveillance in domestic birds insufficient or non-existent in a few countries
7. Important challenges in laboratories



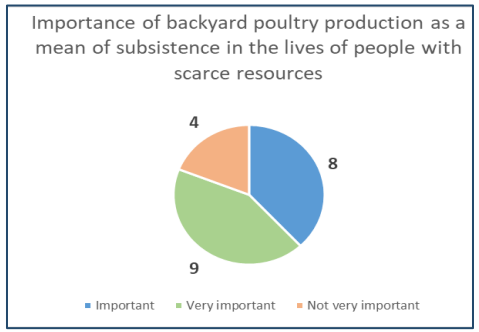
Map. Distribution of domestic chickens in the Americas in 2015. *Distribution of chickens is expressed in total number of chickens per pixel according to the Gridded Livestock of the World database (GLW 4).*

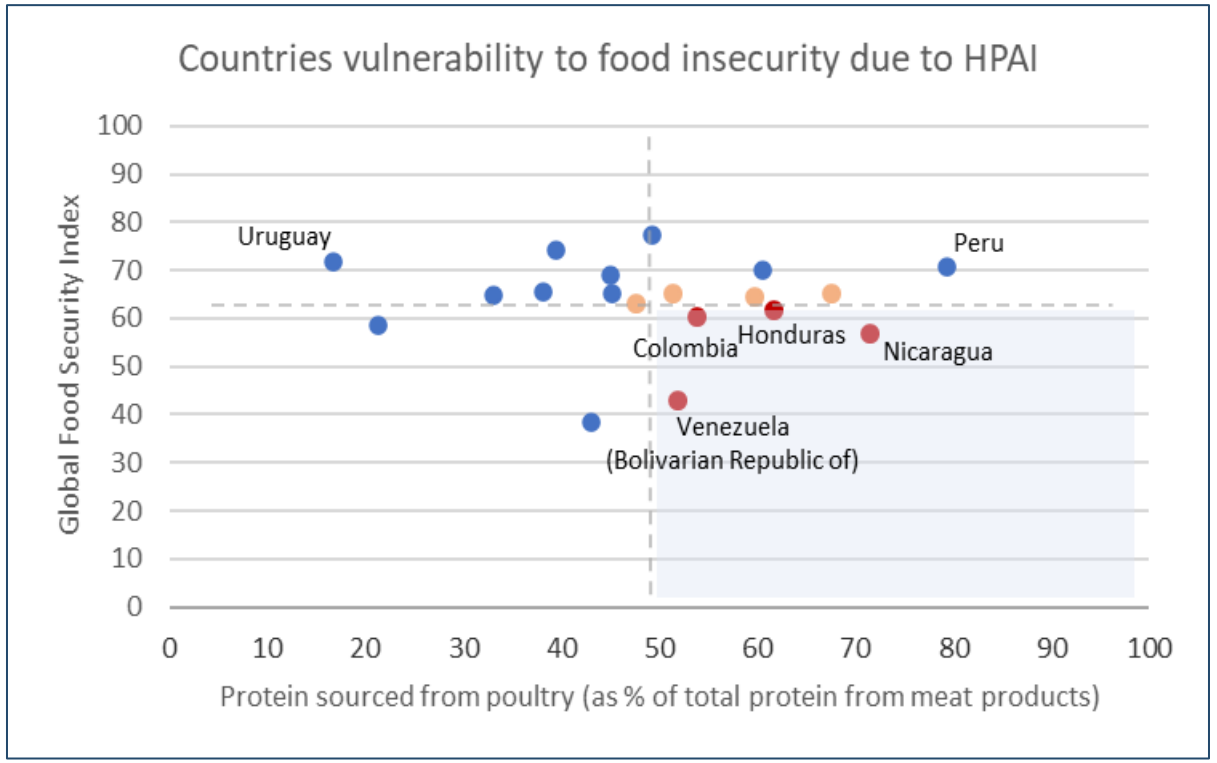
Moderate to high with **moderate uncertainty** for Central America, Brazil Bolivia, Peru, Ecuador, Colombia, Cuba, Dominican Republic…
Negligible to low for other countries -> several small islands in the Caribbean

Severe impacts of HPAI

Burden for animal health

- High mortality in poultry and in wild birds caused by HPAI
- Massive losses for the poultry industry & livelihoods + trade restrictions
- The Americas Region counts major poultry producers (e.g. USA, Mexico, Brazil)
- Poultry industry give jobs to thousands of people
- Importance of backyard poultry as a mean of subsistence
- Vulnerability to food insecurity for certain countries (Important direct losses for the poultry industry and livelihoods)





Nearly 20 countries & territories experiencing HPAI for the first time since 2020 - few experienced HPAI within the Americas

In 2004, it is estimated that **Canada spent around 380 million USD** to contain an H7N3 HPAI outbreak in British Columbia involving 17 million birds. **Chile H7N3 (2002) : 32 mill USD .**
During the **H5N2 HPAI** epizootic in 2014-2015, the **United States spent nearly a billion USD** to cover costs for depopulation, cleaning and disinfection, and indemnities for lost birds, as reported by Johansson et al. (2016).

Severe impacts of HPAI

Continuous pandemic threat

- Zoonotic potential confirmed with currently circulating H5 viruses
  - Human A(H5) infections in Russian Federation, China, the UK, Spain
  - One influenza A(H5) human infection in Colorado State, USA
- Co-circulation of viruses with enhanced adaptation to mammals
  - > 100 events reported in North America
  - H5N1 HPAI in a mink farm in Spain -> opportunity for rapid adaptive mutation

Self-assessment on HPAI preparedness

In terms of provisions (e.g. regulations and frameworks, human and financial resources, capacities, material and equipment) for the following components

Country	Requirements for official imports of live animals and their products	Animal health emergency regulations	Laboratory diagnosis	Quarantine /movement restrictions	Stamping out	Carcass management and disposal	Cleaning and disinfection of affected premises	Sentinel flocks	Compensation schemes	AI Vaccination	Test DIVA*	Risk assessment	Risk-based surveillance design	Field surveillance (detection, reporting, sample collection & transport)
Argentina	Very high	Very high	High	Very high	High	Very high	Very high	High	Moderate	Moderate	Low	High	Very high	Very high
Belize	Very high	Moderate	High	Very high	Very high	Very high	Very high	Low	Low	Non-existent	Non-existent	High	High	Moderate
Brazil	Very high	High	High	Very high	High	High	High	High	High	Non-existent	High	Moderate	High	High
Canada	Very high	Very high	Very high	Very high	Very high	Very high	Very high	Non-existent	Very high	Non-existent	Non-existent	Very high	Very high	Very high
Chile	Very high	Very high	Very high	Very high	Very high	Very high	Very high	High	Non-existent	Non-existent	Non-existent	High	High	High
Costa Rica	Very high	Very high	Moderate	High	High	Low	Low	Low	Low	Low	Non-existent	High	Very high	High
Cuba	Very high	High	High	Very high	High	High	High	High	High	Moderate	Non-existent	Very high	Very high	High
Curaçao	Low	Low	Low	Low	Low	Low	Low	Low	Non-existent	Non-existent	Non-existent	Moderate	Low	Low
Ecuador	High	High	High	High	Low	Low	Low	Low	Non-existent	Non-existent	Non-existent	Non-existent	Low	Moderate
El Salvador	High	Moderate	Moderate	Moderate	High	High	High	High	Low	High	High	High	High	High
Guatemala	Moderate	High	High	High	High	High	Moderate	High	Non-existent	High	Non-existent	Moderate	High	High
Honduras	High	High	Moderate	Moderate	Moderate	Moderate	High	High	Low	Non-existent	Non-existent	Low	Moderate	High
Jamaica	Very high	Moderate	Moderate	Moderate	High	Moderate	Moderate	Low	Moderate	Non-existent	Non-existent	Low	Moderate	Moderate
Mexico	Very high	Very high	Very high	Very high	Very high	Very high	Very high	Very high	Low	Very high	High	Very high	Very high	Very high
Nicaragua	Very high	High	High	High	High	High	High	High	Non-existent	Non-existent	High	High	High	High
Paraguay	High	High	High	High	High	High	High	High	Low	Non-existent	Moderate	High	High	High
Peru	High	High	Moderate	Moderate	Moderate	Moderate	High	Moderate	Non-existent	Non-existent	Non-existent	Very high	Very high	Very high

This self-assessment is only a rapid snapshot and only considers 21 countries in the Americas, yet certain important weaknesses can be identified in several countries.

Self-assessment on HPAI preparedness

- **Compensation schemes**, **AI vaccination**, and **DIVA testing** = components with least preparedness overall
- Then, **sentinel flocks**, **carcass management and disposal**, and **cleaning and disinfection** of affected premises.
- **Self-assessment = only a rapid snapshot** and considers 21 countries in the Americas, yet certain important weaknesses can be identified in several countries.
- Important challenges recorded in the laboratory field (table)
- QRA presents recommendations for the mitigation of the risk of introduction, and directs to key guidance and manuals

Country self-assessment on existing challenges for national laboratories.

Country	Insufficient number of lab technicians	Insufficient Laboratory Biosafety Level (BSL) (<2)	Insufficient funding for lab maintenance	Difficult access to reagents and supplies for processing	Difficult transport of samples to the labs	Lack of equipment to process samples	Lack of materials for sample collection
Peru	√	√	√	√	√	√	
Costa Rica	√	√	√	√		√	
Argentina	√		√	√		√	√
Belize			√	√	√	√	√
Uruguay	√	√	√	√			
Curaçao	√	√	√				
Suriname			√	√			√
Chile			√	√		√	
Ecuador			√	√		√	√
Guatemala	√	√	√				
Honduras	√		√			√	
Jamaica	√	√		√			
Brazil	√		√		√		
Cuba			√	√			
Trinidad and Tobago	√		√				
El Salvador			√	√			
Nicaragua	√						
Paraguay	-	-	-	-	-	-	-
Mexico	-	-	-	-	-	-	-

Discussion

- **Risk of H5 HPAI virus introduction** exists**,** especially through **wild bird movements**
- **HPAI impact = severe**, particularly for animal health and related economics
- Impact also on wildlife (e.g. pelican die-offs), and continuous zoonotic threat
- **Limits** of the risk assessment:
  - Wide geographic scope = not an exhaustive case-by-case assessment
  - Knowledge gaps present = high uncertainty
- **Entry and exposure not combined** to better reflect each segment of risk occurence
- Countries and territories should rapidly prepare for potential incursions
  - HPAI currently present in Mexico, Colombia, Peru, Ecuador, and Venezuela.
  - High risk of spread to neighboring countries
- FAO can provide support to Member States in many ways (sample shipment, provision of reagents and consumables, emergency support, technical expertise…)

ebird, 2022

CBC, 2011

South-Central America - RLC, *FAO ACTIONS;*

- **FAO conducted a qualitative risk assessment for H5 HPAI virus introduction from North America into unaffected 35 countries/18 territories in the Americas from December 2022 to February 2023 through different transmission pathways**.

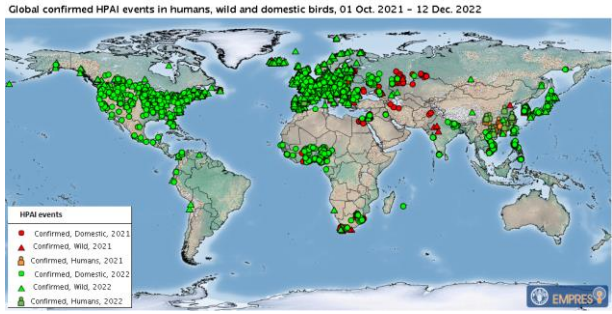
- A **Standing Group of Experts on Avian Influenza (SGE-AI) has been established and will meet this 13 December 2022**, for agreement of a regional framework for prevention, preparedness and control.

- **GF-TADs, through its AI task force, is reviewing the joint FAO-WOAH global control strategy for Avian Influenza** as part of the joint activity to develop new AI global control strategy coping with the evolved epidemiological situation.

- The **Virtual Learning Centre (VLC) Avian Influenza (AI) course is currently being customized to the regional context**, and will be delivered soon in Spanish and English for Latin America and the Caribbean (planned for March).

- **EMC-AH is leading the operational support country's request and started to organize the support for an emergency response mission in the country.** Remote assistance can be an option also, due to political instability on-going in the country;

- **EMPRES Laboratory Unit** could activate the FAST TRACK mode to facilitate procurement of **laboratory consumables and reagents.**



Recommendations

- **Raise awareness of the general public, poultry producers and value chain actors on** importance of **biosecurity at all levels**, the disease as well as the **reporting mechanisms** for sick or dead birds.
- **Increase surveillance efforts for the early detection** of H5 and other avian influenza viruses in poultry and dead/sick wild birds.
- **Provide support and guidance** for proper, biosecure disposal of carcasses after sample collection….
- Ensure **the laboratories are able to conduct testing** to confirm the currently circulating avian influenza.
- Efforts **should be made to geneome sequence avian influenza** viruses detected, either in national or international reference laboratories. The results should be shared for the benefit of the region and with the global community in a timely manner, as the molecular epidemiology can highlight how the virus is spreading, it will help decision makers to make evidence based informed decisions.

Guidance and manuals

- FAO Alert for the Americas, September 2022: H5 Highly Pathogenic Avian Influenza – risk for introduction and spread – English French and Spanish
- Preparing for Highly Pathogenic Avian Influenza (FAO Manual No. 3 - 2006) - English, Spanish and multiple other languages
- Biosecurity for Highly Pathogenic Avian Influenza (FAO Manual No. 165 – 2008) – in English and French
- Biosecurity guide for live poultry markets. FAO Animal Production and Health Guidelines No. 17 – in English and French
- Wild Birds and Avian Influenza (FAO Animal Health Manual No. 5 - 2007) – English, French and multiple other languages
- Wild Bird Highly Pathogenic Avian Influenza Surveillance (FAO Manual No. 4 - 2006) – English, French and multiple other languages
- Humane Slaughter Association – Online guide for human killing methods available for species and their suitability for circumstances. Recommended methods for killing poultry. https://www.hsa.org.uk/killing-poultry/killing-poultry
- Carcass management guidelines (FAO Animal Production and Health Guidelines No.23 - 2006) – English, French, Spanish, and other languages
- Good Emergency Management Practice: The Essentials (FAO Manual No. 25 – 2021) – English and Spanish
- Manual for the management of operations during an animal health emergency (FAO Manual No. 27 – 2022) – in English and French
- Compensation programs for the sanitary emergence of HPAI-H5N1 in Latina America and the Caribbean (FAO Manual No. 6 – 2008) – English and Spanish
- FAO-EMPRES Focus on: Rational use of vaccination for control and prevention of H5 highly pathogenic avian influenza (EMPRES FOCUS ON) – in English and French
- EMPRES Animal Health 360 – Avian influenza: information must improve effective interventions – in English

Websites

- Global Avian Influenza Virus with Zoonotic Potential situation update – (available through email distribution; if interested please contact: EMPRES-Livestock@fao.org)
- USDA Animal and Plant Health Inspection Service (APHIS) – 2022 Detections of Highly Pathogenic Avian Influenza
- CFIA Response to detections of avian influenza in Canada
- Joint WOAH-FAO Network of Expertise on Animal Influenza (OFFLU) website
- World Health Organization (WHO) avian influenza page
- World Organization for Animal Health (WOAH) avian influenza page
- WHO Vaccine Composition Meeting Report – September 2022

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Thank you!