

# Swine influenza: Africa surveillance update

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3 - 4 April 2024

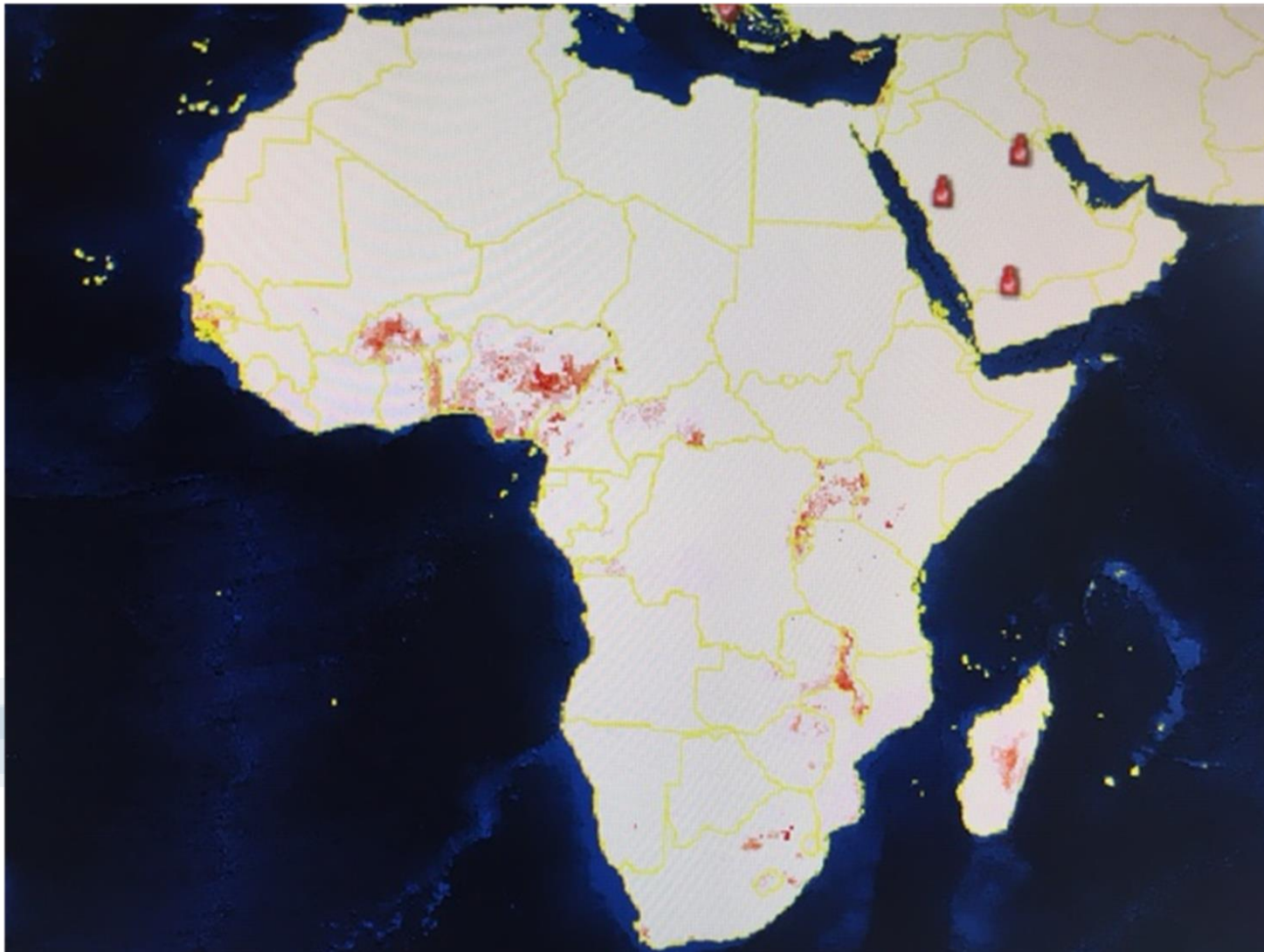
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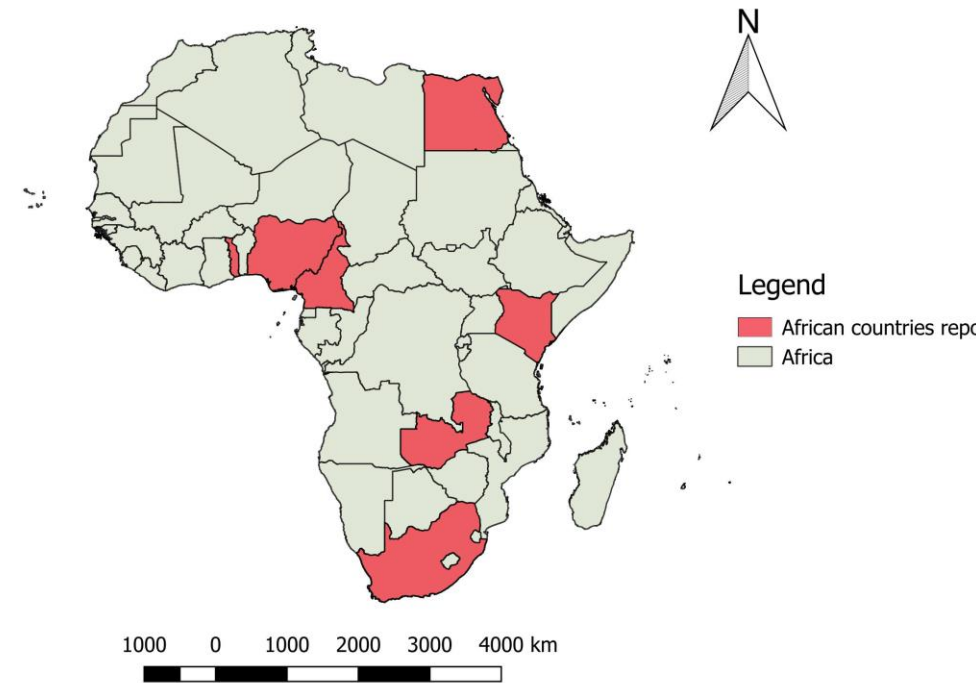
# Pig husbandry in Africa



# Africa pig density map



Africa\_SIV\_2022



# Pig husbandry in Africa

2024 - OFFLU Swine Influenza virus Technical Meeting



1. Intensive commercial 2. Backyard 3. Feral 4. Live animal market



# Africa surveillance update



# Africa surveillance update ...

- “A systematic review of influenza A virus prevalence and transmission dynamics in backyard swine populations globally” (Chauhan & Gordon 2022)
  - Reported highest number of studies from Asia (n = 11)
  - North America (n = 10)
  - South America (n = 6)
  - **Africa (n = 6)**
  - Europe (n = 1)

# Africa surveillance update ...

Country	Year	Study	Reference
<b>Nigeria</b>	2024	Influenza A virus antibodies in horses and pigs in Nigeria / H1N1pdm in 90 swine sera in Jan 2024- (unpublished data)	Adamu et al, 2024
<b>Cameroon</b>	2023	A/H1N1/pdm09 detected in Swine by RT-PCR	Tahmo et al, 2023
<b>Zambia</b>	2021	H3N2 and 8 H1N1 IAV strains were isolated from pigs	Harima et al., 2021
<b>Ghana</b>	2020	H3N2 and H1N1pdm09 were found in swine and human samples	Ayim-Akonor et al., 2020
<b>Senegal</b>	2019	Influenza A Virus in Pigs, Senegal...	Jallow et al., 2023
<b>Kenya</b>	2019	230 (11.56%) sera and 1(x%) of 2066 nasal swabs from pigs was positive for AIV	Osoro et. al.,2019
<b>South Africa</b>	2018	51 oral and nasal specimens from pigs, 44 (52.4%) and 6 (11.8%) had molecular evidence of influenza A virus	Zowalaty et al., 2022
<b>Uganda</b>	2018	IAV specific antibodies in 26 (4.98%) out of 522 clinically healthy swine	Dione et al., 2018

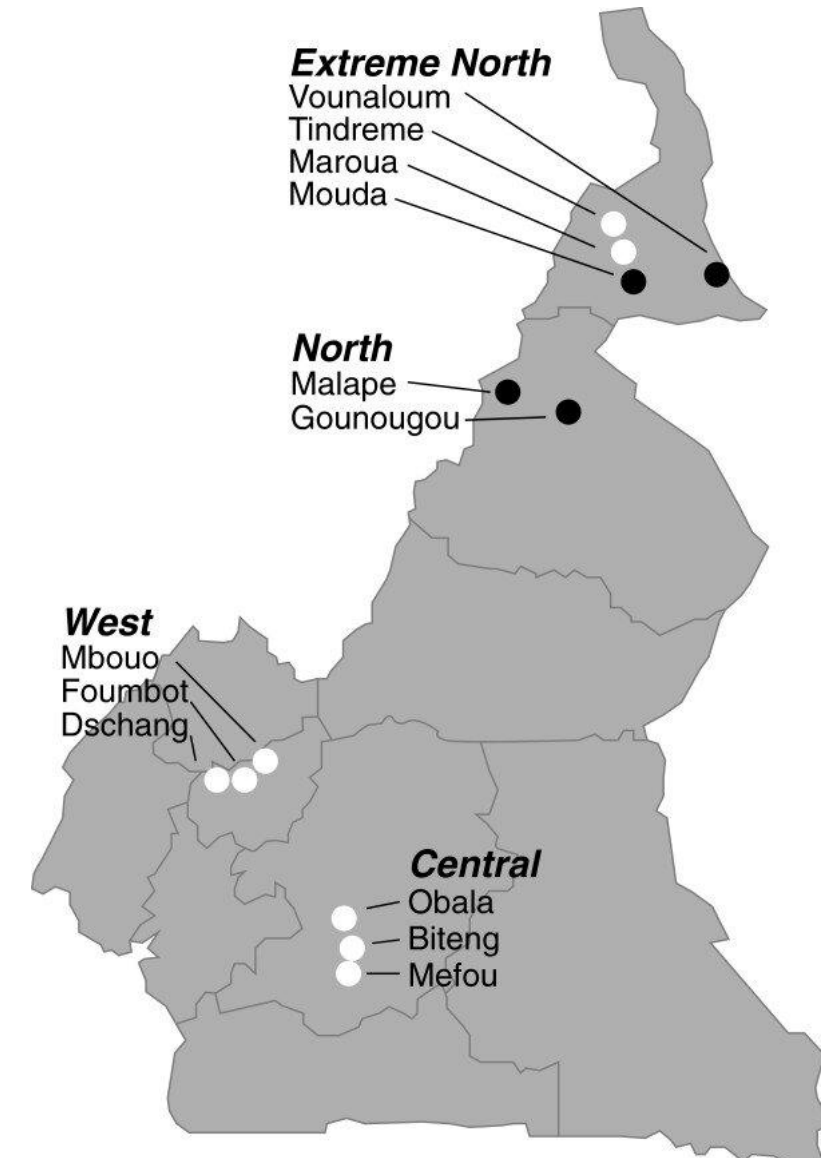


## ...Benin and Cote d' Ivoire

- 62 and 1548 nasal and oral swab samples were collected from backyard pigs in Benin and Cote d'Ivoire respectively
  - None was IAV positive by RT-PCR
- 457 blood samples from backyard pigs in Cote d'Ivoire tested by ELISA and HI were also negative for IAV serology (Couacy-Hymann et al 2012).

# ...Cameroon

- IAV in backyard swine: study was conducted in rural Cameroon during December 2009 and August 2012.
  - 325 nasal swabs and sera samples were collected
  - 2 samples were positive for A(H1N1)pdm09 by RT-PCR
  - One sample had antibodies for A(H1N1)pdm09 and H3N2 (Larison et al., 2014),
- In 2023, Influenza virus, human rhinovirus, parainfluenza virus, enterovirus, human ... Pandemic A/H1N1/2009 influenza virus were detected in Swine (Tahmo et al, 2023)



## ...Kenya

- 1491 nasal swab samples from backyard swine during 2010 - 2012 identified 11 (0.7%) pigs infected with pandemic A(H1N1)pdm09
- 13 (10.2%) of 127 swine sera were IAV positive by ELISA assay, while the HI assay detected H1N1 and H3N2 virus-specific antibodies (Munyua et al, 2018).
- 230 (11.56%) sera and only one of 2066 nasal swabs from pigs was positive for AIV (Osoro et. al., 2019).

## ...Uganda

- One study investigated the seroprevalence of IAV in Ugandan backyard swine
  - The study reported IAV specific antibodies in 26 (4.98%) of 522 clinically healthy swine sera collected from households in the Lira and Masaka districts in 2015 (Dione et al., 2018).

## ...Zambia

- One H3N2 and 8 H1N1 IAV strains were isolated from  
Zambian pigs (Harima et al., 2021)
- Phylogenetic analyses of all eight gene segments revealed  
isolates closely related to human IAV strains belonging to  
A(H1N1)pdm09 and seasonal H3N2 lineages
- Findings indicate that reverse zoonotic transmission from  
humans to pigs occurred during the study period

## ...Ghana

- Previously H1N1pdm diagnosed at Kumasi Academy Senior High School in Feb 2018 <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-09467-x>
- In another study "Exposure of domestic swine to influenza A viruses (H1N1,H3N2) in Ghana suggests unidirectional, reverse zoonotic transmission at the human–animal interface (Ayim-Akonor et al., 2020)
- H3N2 and H1N1pdm09 were found in swine and human samples
- H3N2v detected among some football player of Accra Hearts of Oak on 21 May 2022 during COVID-19 screening for respiratory symptoms in people
- Canada supported study ..... H5N1 2021

# ...Senegal

- 1691 swine nasal swabs were collected in 2018-2019
- Influenza A virus was detected in 30.7% (520/1691)
- A/H1N1pdm09 virus was most common subtype with 38.07% (198/520), A/H1N2 (16.3%) and A/H3N2 (5.2%)
- Phylogenetic analyses revealed IAVs were closely related to human IAV strains belonging to A/H1N1pdm09 and seasonal H3N2 subtype



# ...Nigeria

- In 2024, ELISA detected flu A antibody in 150 sera and 90 A(H1N1)pdm09 subtype (unpublished data)
- 115 swabs tested and 7 positive for flu A
- Influenza A virus antibodies found in horses and pigs (Adamu et al, 2024)
  - RT-PCR detected 43 flu A positive samples yet to be subtyped





## Other recent IAV events in other species

- H5N1 domestic poultry - 2024 continuing
- H5N1 wild birds - 2024
- H5N1 in cats - by PCR and Serology - 2023/2024
- H9N2 poultry (farms/local chickens /LBM)- 2024
- H5N2 reassortant (H5N1 + H9N2) poultry - 2022
- H3N8 Fc-1 - donkeys - 2023
- H9N2 LPAI + IBV/NDV = high mortality - 2023-2024
- H9N2 in pigs - Egypt

# Conclusions



- Swine flu surveillance data from Africa are few and inconsistent compared to Asia, Europe and America
- Genomic data in genbank and other repositories from Africa is limited
- The need for funding attention cannot be overemphasised
  - *Virus is circulating in limited biosecurity operations*
- Potential re-assortments and recombination with other IAVs is a concern



Thank you