• BUREAU OF AGRICULTURE AND FISHERIES STANDARDS •
TECHNICAL BULLETIN

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Issue	AVIAN INFLUENZA
Background	Last May, China reported its first human case of a new strain of avian flu. The 41-year old man from Jiangsu province initially reported symptoms on April 23, 2021. A month later the diagnosis confirmed his infection. As of June 8, 2021, no other human cases have been identified. They have not also established any evidence regarding human-to-human transmission of the said viral strain. In the Philippines, the first avian flu virus was detected in 2005 after a duck farm in Bulacan was subjected to standard testing required for exports. The animals showed no symptoms. The virus was also found as a low pathogen strain which is not a public health concern. However on August 11, 2017, the first case of highly pathogenic avian influenza (HPAI) subtype A H5N6 was officially reported in the country detected in San Luis, Pampanga. Subsequent outbreaks were observed in some municipalities of Nueva Ecija namely Jaen, San Isidor and Cabiao. A total of 23 farms were infected- 15 layer chicken farms, 6 duck farms and 2 quail farms. About 45000 birds died from the disease while 300,000 birds were killed as part of the management program[1]. This was successfully controlled where the last notification of outbreak was submitted to the Animal Health Organization (OIE) on June 27, 2018. The country enjoyed a two-year disease free status until its recurrence in 2020 where the virus was observed in the provinces of Nueva Ecija, Pampanga and Rizal. About 12,000 quails died and at least 38000 were culled as part of the government mitigating measures[2]. On January 8,

[1] An article by Roderick Salvador et. al, entitled Identification of High-Risk Areas for the Spread of Highly Pathogenic Avian Influenza in Central Luzon, Philippines noted that 45,682 birds died from the virus and 393,515 birds were killed as part of the disease control program.

[2] The figures were noted in The Poultry Site last July 29, 2020 found in this link: https://www.thepoultrysite.com/news/2020/07/philippines-slaughters-over-38-000-chickens-in-response-to-bird-flu-outbreak

	2021, the Department of Agriculture (DA) proudly announced its success in eradicating the virus. Further, the DA had ceased temporarily importing poultry products from the following countries as a precautionary measure since another highly pathogenic strain of the virus was detected: France, South Korea, the Netherlands and Poland. HPAI subtypes A (H5N1), A(H7N9), and A(H9N2) are the strains considered zoonotic or can infect humans. Consumers and personnel exposed in poultry production are advised to take extra precaution regardless of the outbreaks. The type A influenza viruses mainly infect avian species and mammals where domestic poultry production such as chickens and ducks would be highly affected. Chicken broiler and egg production are the most progressive animal enterprises in the Philippines. In fact, chicken contributes 90 percent of world poultry meat production, followed by turkeys with 5 percent, ducks with 4 percent and geese and guinea fowl with 2 percent. The rest comes from other poultry species. It's meat and eggs are the best source of quality protein, vitamins and minerals in countries where poverty greatly affects the health condition of an individual.
General Description	***Disease:*** Avian Influenza (AI) also known as bird flu or avian flu is a highly contagious viral disease affecting several species of birds including food producing birds (chickens, turkeys, quails, guinea fowl, etc.). ***Causative agent/pathogen:*** Avian Influenza Viruses are negative sense single stranded RNA viruses with segmented genomes. They belong to the *Orthomyxoviridae* Family. Four main influenza virus species are known as types A, B, C and D. Type A influenza viruses are known to infect birds and mammals. These viruses are further classified into subtypes based on two (2) surface proteins namely hemagglutinin (HA) and neuraminidase (NA) - e.g H1N1, H5N1, H5N6, etc. There are at least 16 hemagglutinins (H1 to H16) and 9 neuraminidases (N1 to N9) found in birds. Two (2) additional HA and NA types have been identified in bats. Another classification of the virus is through its ability to cause severe disease. The types are known as Low Pathogenicity (LPAI) and High Pathogenicity (HPAI) strains. LPAI, typically causes few or no clinical

signs and HPAI, in contrast, causes severe clinical signs and potential high mortality rates (90-100%) among poultry.

Hosts

Poultry
English name: domesticated avian species; can be raised for eggs, meat and/or feathers.

Common name: Chicken
Scientific name: *Gallus gallus domesticus*

Common name: Muscovy duck
Scientific name: *Cairina moschata*

Common name: Mallard duck
Scientific name: *Anas platyrhyncos*

Common name: Turkey
Scientific name: *Meleagris gallopavo*

Common name: Chicken
Scientific name: *Gallus gallus domesticus*

Common name: Geese
Scientific name: *Anser anser*

Common name: Quail
Scientific name: *Coturnix coturnix japonica*

Common name: Pigeon
Scientific name: *Columbia livia*

Common name: Ostrich
Scientific name: *Struthio camelus*

Common name: Pheasant
Scientific name: *Phasianus colchicus*

Common name: Guinea fowl
Scientific name: *Numida meleagris*

AI virus survivability
Feces
- At 4 °C, 35 days
- At 15°C - 35°C , 1-7 days (under controlled laboratory conditions)

Solid surfaces (without sunlight and with low relative humidity)
- At At 15°C - 30°C, 20-32 days
- At 4 °C, at least 14 days

Feathers
- At room temperatures, 6 days

	● 20°C, 15 days ● 4°C, 160 days ***<u>Transmission</u>*** Bird to bird transmission of AI virus: ● feces or fecal-oral route ● respiratory secretions of birds ● direct contact with secretions from infected birds especially through faeces or through contaminated feed and water ● aerosols ● fomites ● infected broken eggs could transmit the virus to other chicks in the incubator Bird to mammals ● close contact with infected birds or their tissues ● fomites Foodborne transmission ● ingestion of raw tissues (including blood and eggs) from infected birds ● ingestion of improperly cooked infected meat
Avian flu/Bird Flu virus persistence in Food	Poultry meat, pH 7 ● 20°C, >50 days ● 4°C, 6 months [3]Eggs (when virus is experimentally added to the products) ● 4-20°C, 17 days Water (when contaminated by infected feces) ● 10 days to 1 year (depending on the temperature, pH, salinity of water
Adverse Health Effect in Human	Once infected, symptoms in humans may range from conjunctivitis, fever, severe respiratory disease, dyspnea, multi-organ failure, and death, with an incubation period between five and ten days.

[3] Sick birds will stop producing eggs. However eggs laid in the early phase of infection may contain the virus in the albumen, yolk and shell.

Risk Mitigation	How to prevent and control AI viruses? 1. Protective measures: a. Controlling the source of the virus (e.g., eradicating HPAI viruses, closing infected poultry markets); b. Avoiding contact with sick animals, animals known to be infected, and their environments; c. employing good sanitation and hygiene (e.g., hand washing); and d. Using personal protective equipment (PPE) where appropriate. Recommended PPE: a. Use of respirators and goggles for respiratory and eye protection b. Gloves c. Washing of hands with soap and water before eating, drinking, smoking, or rubbing the eyes. 2. Heating The virus is sensitive to heat and can be inactivated by heat of 56-60°C (133-140°F) for a minimum of 60 minutes (or higher temperatures for shorter periods), ionizing radiation or extremes of pH (pH 1-3 or pH 10-14). For liquid eggs, pasteurization is recommended (e.g. whole egg, 60°C, 210 seconds; liquid egg white, 55.6°C, 372 seconds; 10% salted yolk, 63.3°C, 210 seconds). 3. Disinfection Influenza A viruses are susceptible to disinfectants: ● sodium hypochlorite ● 60% to 95% ethanol ● quaternary ammonium compounds ● aldehydes (glutaraldehyde, formaldehyde) ● phenols ● acids ● povidone- iodine and other agents.

	What should raisers do? 1. Implement requirements of Good Animal Husbandry Practices (GAHP) standards[4] 2. Report any unusual mortalities of poultry in the farm 3. Ensure that people, vehicle and/or equipment have undergone proper cleaning and disinfection What can consumers do? 1. Disinfect kitchen utensils and other domestic implements to avoid spread of virus. 2. Cook meat thoroughly to the recommended temperature of 70 °C which was found to kill the virus present in food. 3. Do not eat undercooked poultry products. 4. Separate raw meat from cooked or ready to eat foods to avoid contamination 5. Good hygienic practices such as disinfection of surfaces and good personal hygiene (*e.g hand washing*) will help in controlling the spread of virus.
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[4] Relevant Philippine National Standards (PNS): PNS/BAFS 184:2016 GAHP Chicken Broilers Layers; PNS/BAFS 263:2018 GAHP for Poultry Hatchery; PNS/BAFS 271:2019 GAHP for Ducks; PNS/BAFS 296:2020 GAHP Animal Welfare and Environmental Sustainability for Chicken and Duck; and PNS/BAFS 60:2008 Code of good animal husbandry practices (GAHP). All can be found at http://www.bafs.da.gov.ph/databases.

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