

Highly Pathogenic Avian Influenza Update



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HPAI / LPAI

- No HPAI in Texas to date – 2015 US outbreak
- Avian Influenza viruses are enveloped RNA viruses
 - chickens, turkeys, pheasant, quail, ducks, geese, guinea fowl and other avian species. (Orthomyxovirus family)
- No evidence that transmission of viruses to man can occur through properly prepared poultry or eggs. (Household setting is low risk).
- Designation of HPAI vs LPAI:
 - 16 H types / 9 N types classified: only H5 and H7 have been assoc. with HPAI in poultry



HPAI / LPAI

- HPAI vs LPAI – Pathogenicity – high mortality
- Clinically : upper respiratory signs in chickens (mild , moderate or severe): ocular-nasal discharge, swollen sinuses, swollen edematous wattles with blue discoloration, redness or hyperemia to legs, acute death, ruffled feathers, loss of appetite, huddling behavior, rapid spread with high death losses.
- Significance – clinical signs may not be pathognomonic –depending on environment, age of poultry, immunity etc.



HPAI / LPAI

- Significance - trade restrictions – notification of OIE with any H5 / H7 types. (Texas is number 6 in US for poultry products.)
- Significance – viral mutation to a HPAI strain in the host – risk to poultry industry.
- Significance - Transmission to humans – Epidemiology of human influenza infection – contact with poultry



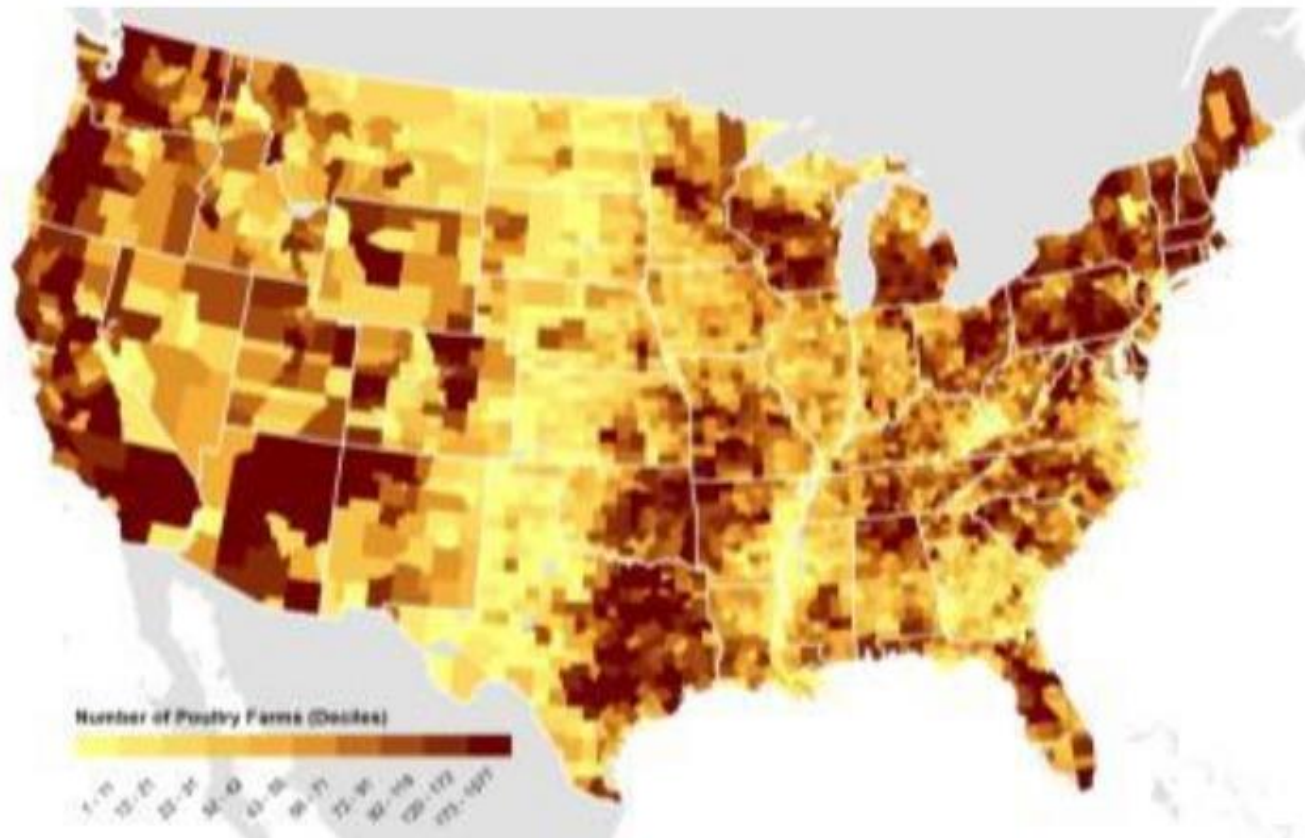
Texas Poultry Industry

- Total Value: \$4 billion
- Total employment: approx. 18,000 jobs
- Sectors:
 - 14.4 million laying hens; 3.8 billion eggs
 - Sixth nationally
 - 640 million broilers
 - Sixth nationally



Poultry Concentrations

Figure 8. Distribution of U.S. poultry production in the United States. (Top) Number of poultry farms per county; (Bottom) Mean number of birds per farm. Data from National Agricultural Statistics Service (NASS).



2015 US HPAI* Outbreak

- Influenza viruses: H5Nx
- Index case: wild birds in WA, December 2014
- Total states affected: twenty-one (21)
 - Commercial poultry premises
 - Backyard flocks
 - Wild birds

*Avian influenza A viruses are designated as highly pathogenic avian influenza (HPAI) or low pathogenicity avian influenza (LPAI) based on molecular characteristics of the virus and the ability of the virus to cause disease and mortality in chickens in a laboratory setting.



2015 HPAI Outbreak

- H5N8 in OR backyard poultry December 2014
 - Additional cases H5N8 and H5N2 in NW US (aligned with Pacific flyway) subsequent 3 months



2015 HPAI Outbreak

- December 2014 - January 2015
 - H5N2 and H5N8 viruses found in wild birds in several states
- January 2015
 - H5N1 virus detected in a wild duck
 - new re-assortment, genetically different from the Asian avian H5N1 viruses that have caused human infections with high mortality in several other countries (notably in Asia and Africa).
 - No human infections with this new re-assortment H5N1 virus have been reported.



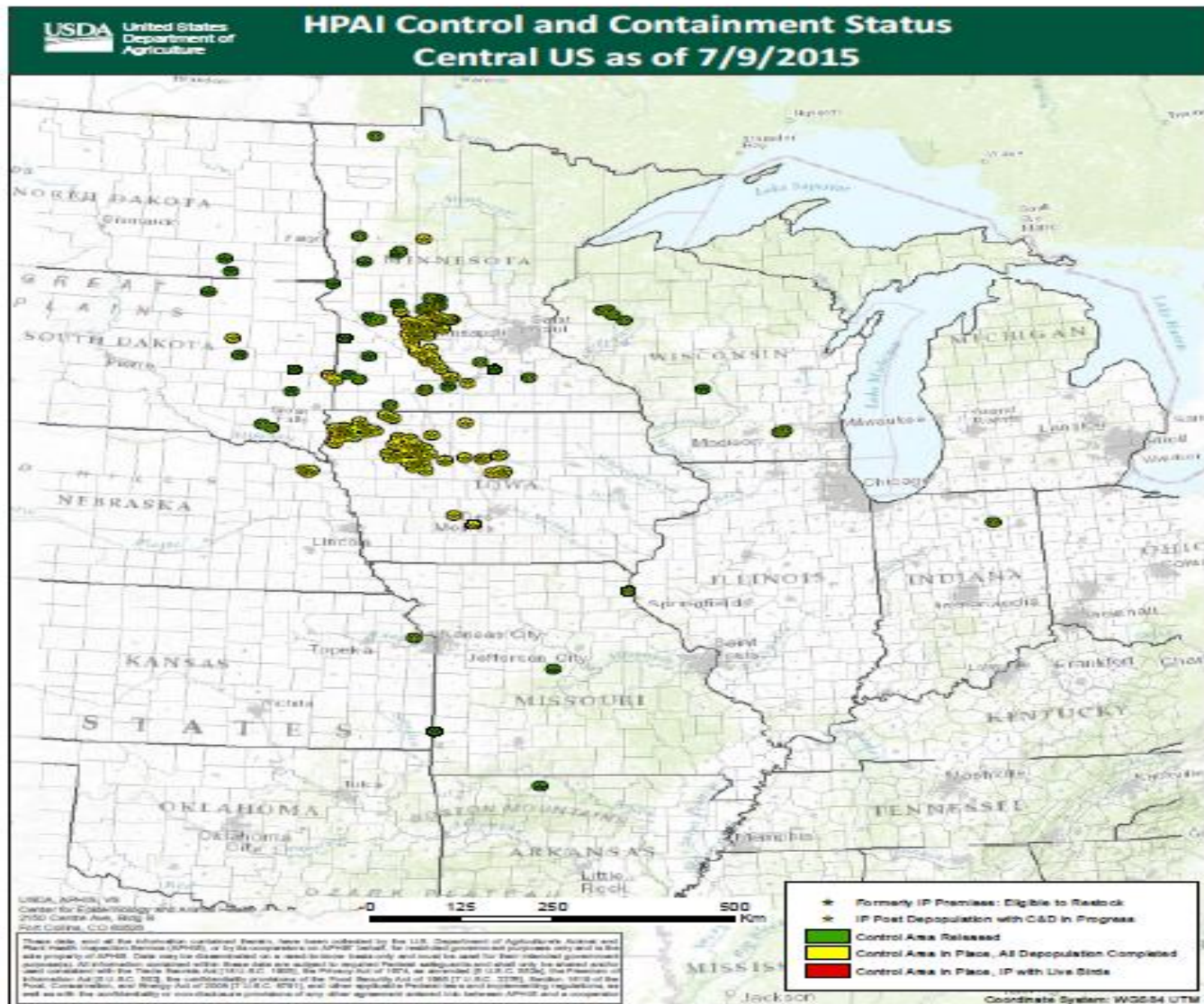
2015 HPAI Outbreak

- H2N2 in commercial turkeys in MN, MO, AR beginning March 2015
 - HIGH (80-90%) mortality
 - Many commercial flocks affected (MS flyway)
- H2N2 in Midwest egg-laying hens beginning April 2015
 - Additional turkey, backyard, chicken and layer flocks through June 2015
- Central flyway – NE and SD all flock types
 - Smaller numbers affected than in MS flyway area



Last Detection Reported

2015 HPAI Outbreak



2015 HPAI Outbreak Depopulation

- Turkeys: approximately 7.5 million
 - 0 % pending depopulation
- Layer chickens and pullets: approximately 42.1 million
- Foaming, Heat Assisted Ventilation Shutdown
- AVMA consensus on humane care



2015 HPAI Outbreak

Impact as of 6/22/2015

- 3.16% of U.S. annual turkey production, or 7.46% of average U.S. turkey inventory
- 10.01% of U.S. average layer inventory
- 6.33% of U.S. average pullet inventory
- Broiler infection has been quite limited and represents less than 0.01% of U.S. broiler inventory.



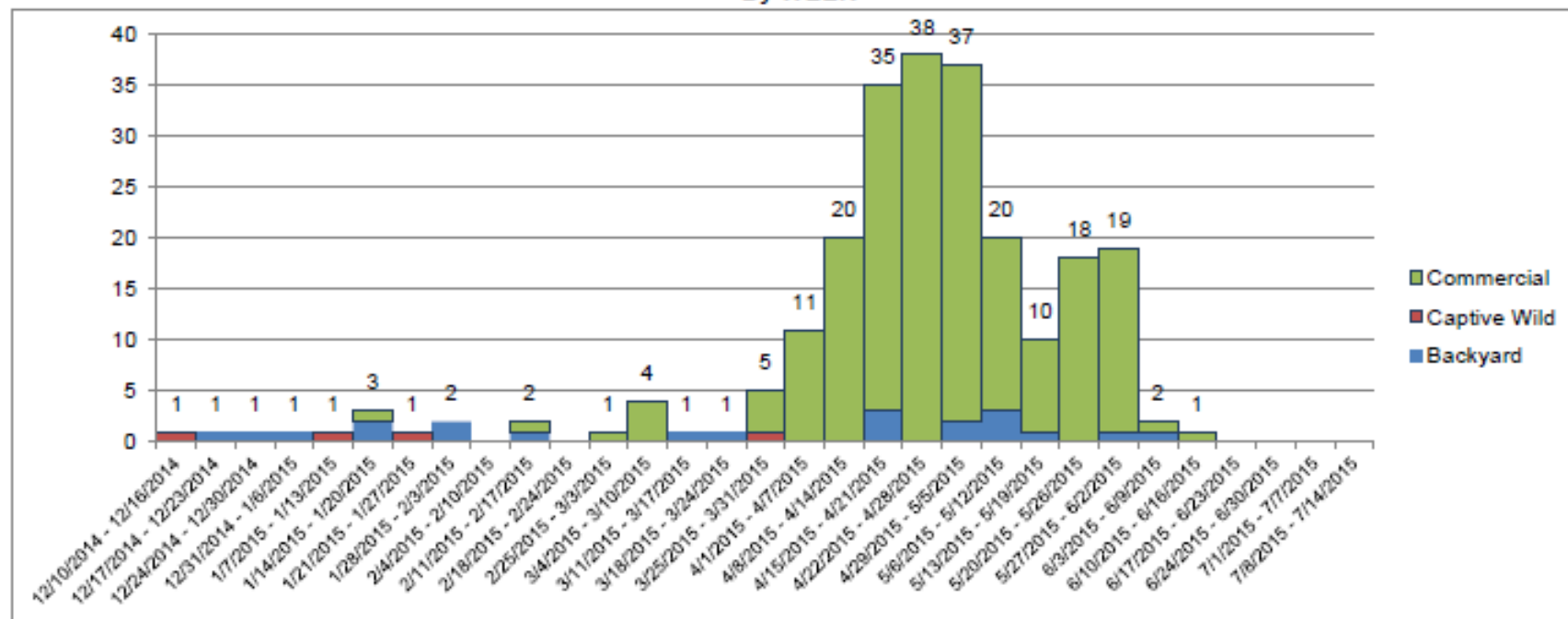
H7N8 Outbreak 2016

- January 2016 Dubois County, Indiana
- Detected from increased death loss in commercial turkey industry
- 1 case of HPAI , 8 cases of LPAI confirmed
- On-Farm questionnaires found physical and management characteristics changed due to 2015 HPAI outbreak





Figure 1. Premises Detected for ALL STATES 12/10/14 to 7/16/2015
Captive Wild, Backyard, Commercial
By WEEK



- Earliest available date indicating clinical signs is used for figure. For most premises, this is the date of clinical signs if known, a suspect status, or a presumptive positive status. Some premises may only have a confirmed positive status date.
- All data are from EMRS.
 - 238 premises (4 captive wild bird; 21 backyard flocks; 211 commercial flocks).
 - This graph only represents full 7-day weeks; in addition to the dates pictured, there have been no detections since 7/14/2015.
 - This represents 80% of the captive wild detections, 100% of the backyard flock detections, and 100% of the commercial flocks to date.
 - Figures may change slightly as data is added or updated in EMRS (e.g., date of clinical signs).

2015 HPAI Outbreak Epidemiology

- First cases likely introduced by wild birds
- Recent USDA report
 - No specific pathway, but genetic analysis → independent introductions AND transmission between farms
 - Insufficient application of recommended biosecurity practices
 - Environmental factors – spread by wind?



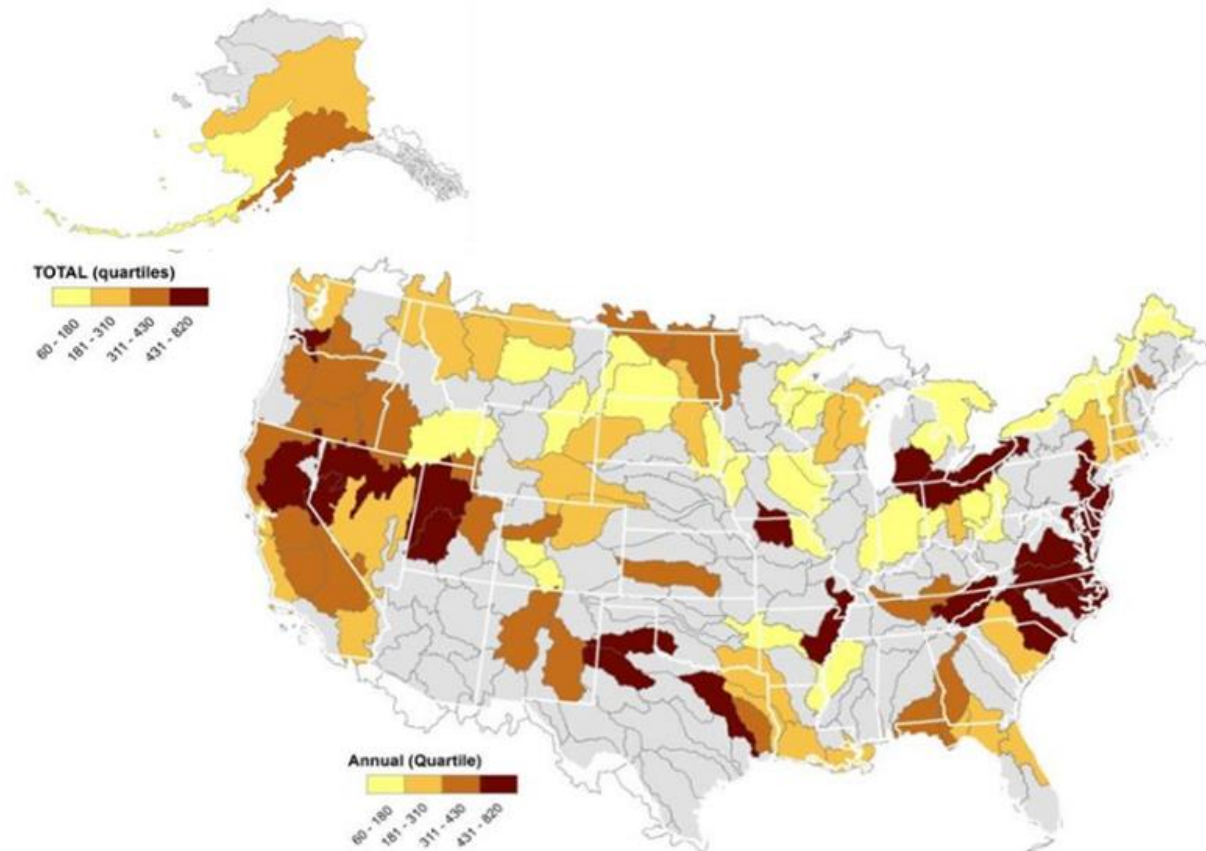
Migratory bird flyways



Surveillance Plans- How AI is Monitored

- USDA/USGS National Surveillance Plan 2015

B) Targeted Priority Watersheds were further prioritized by identifying watersheds in the upper 50th percentile of dabbling duck network mixing importance or with a historically significant influenza A cluster. Sampling would vary seasonally.



Surveillance Plans

Wild Birds

State	County	Species	Avian influenza subtype*	Confirmation date
MT	Flathead	Captive gyrfalcon	EA/AM-H5N2	March 27, 2015
MO	St. Louis	Captive falcon (hybrid)	EA/AM-H5N2	March 27, 2015
ID	Kootenai	Captive gyrfalcon (2)	EA-H5N8	January 29, 2015 February 6, 2015
ID	Canyon	Captive falcons, Great horned owl	EA/AM-H5N2	January 16, 2015 February 2, 2015
WA	Whatcom	Captive gyrfalcon	EA-H5N8	December 14, 2014

* References to EA and AM under avian influenza subtype indicate *Eurasian and American strains of the virus.*



National Surveillance Plans



1. Poultry Industry

- National Poultry Improvement Plan- (NPIP)

Cooperative Federal-State-industry mechanism for controlling certain poultry diseases. Mycoplasma, Salmonella , AI.

- identifies States, flocks, hatcheries, dealers, and slaughter plants that meet disease control standards. Customers can buy poultry that has tested clean of certain diseases or that has been produced under disease prevention conditions.



Surveillance Plans

- 2. Live bird markets (LBM)
 - Prevention and Control of H5 and H7 Low Pathogenicity Avian Influenza in the Live Bird Marketing System
https://www.aphis.usda.gov/animal_health/animal_dis_spec/poultry/downloads/lbms_program_standards_final.pdf
- Live bird market: Any facility (including botanica, poultry store, or custom slaughter) that sells live poultry for onsite slaughter or for offsite ritual use.
- Live bird marketing system (LBMS): The LBMS includes live bird markets and their production and distribution systems.



Surveillance Plans (LBM)



Surveillance Plans

3. Foreign animal disease investigations (FAD's)

- Sick bird calls to TAHC

- Practitioner-reported 1-800-550-8242 HOTLINE

- Laboratory reported surveillance samples from
vets

- initiates a producer call from RD, field vet,
FAD investigation number, farm visit and
sampling; Plum Island or NVSL in Ames IA



Texas Situation –during the 2015 outbreak

- Poultry and poultry products are safe to eat/use
- Permitted movement in place for birds and products from affected areas
- Tracing and disposal of exposed eggs/birds
- Weekly national coordination calls
- Biosecurity awareness and contingency planning
– producer meetings with industry.



HPAI Preparations in Texas

- **Texas Emergency Disease Management Committee**
 - Texas Animal Health Commission
 - USDA APHIS Veterinary Services
 - Texas Poultry Federation
 - Industry representatives
 - Texas A&M University System Veterinary Medical Diagnostic Laboratory
 - National Poultry Improvement Program
 - Texas A&M Agrilife Extension



HPAI Preparations in Texas

- Outreach
 - Biosecurity
 - Backyard and non-typical poultry producers
 - Encourage reporting
- Surveillance
 - National Poultry Improvement Plan
 - Live bird markets
 - Foreign animal disease investigations



HPAI Preparations in Texas

- Regulation
 - Birds and products coming from infected states
 - Testing requirements
 - Entry permit requirements
 - Routine movement from other states
 - Movement from HPAI-affected states



The essential elements to avoid the introduction of avian influenza include:

- Avoid direct contact between all other avian species and poultry (waterfowl, etc.).
- Allow no visitors on to poultry premises.
- Assure that permit requirements are closely followed.
- Train all personnel regarding biosecurity and monitoring practices.
- Monitor for avian influenza
- Promptly react to any suspected outbreak.



National Veterinary Stockpile

- National repository of critical veterinary countermeasures
 - (i.e. supplies, equipment, test kits, vaccines, and commercial response support services)
- Similar in form to Strategic National Stockpile

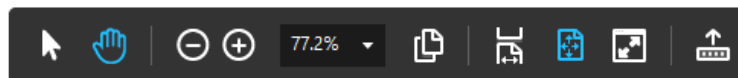


National Veterinary Stockpile



Deployable Countermeasures

- 24 Hour Push Packs of Personal Protection Equipment (PPE) and decon supplies
- PPE individual kits
- Antiviral medications
- Vaccine
- Poultry depopulation foaming units, CO2 carts
- Portable vaccine shipment / storage containers
- Large animal handling equipment
- Response support services



USDA planning resources

FAD PReP Materials and References

Last Modified: Jul 15, 2015



HPAI Response Information: 2014-2015 Outbreak

Policy

- First HPAI Confirmation in a New State
- HPAI Zones and Premises
- Movement Control
- Indemnity Procedures
- UPDATED 7/2: Processing Indemnity Payments
- Surveillance Activities around HPAI Infected Backyard Flocks
- Surveillance Sampling for Commercial Premises in Control Area
- UPDATED 5/22: Timeline to Restocking & Environmental Sampling Procedures
- Control Area Release
- Contact Premises
- Restocking Criteria for Previously Infected Premises

Health & Safety Information

- Quick Response Card
- Responder Health Alert--Influenza Like Illness

For More Information on HPAI & Response

- General Resources and Information

Related Links

[Foot-and-Mouth Disease \(FMD\)](#)

[National Veterinary Stockpile \(NVS\)](#)

[FAD PReP Training and Educational Materials](#)

[Animal Health Emergency Management](#)

[Emergency Management Response Services \(EMRS\)](#)





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