



Transboundary or Emerging Disease Event: **We are Here to Help**

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ENVIRONMENTAL HEALTH AND SAFETY

Goals

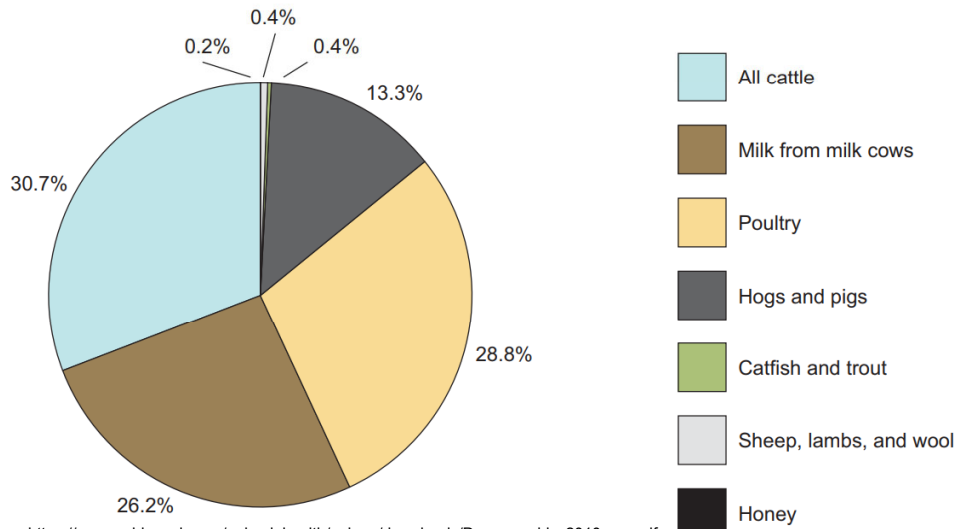
- Awareness that animal biosecurity is addressed at the national level for transboundary diseases
 - Who's who during an outbreak
- Biosafety professionals have valuable resources that may be requested during an outbreak

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Fig. A1.1: Value of production in 2010: specific commodities as a percentage of respective total livestock, poultry, and their products

United States



Source: https://www.aphis.usda.gov/animal_health/nahms/downloads/Demographics2010_rev.pdf

Economic Impacts of Foot and Mouth Disease

- One of the most contagious diseases of livestock.
- Projected cumulative losses for 10 years--\$199.8 Billion (Hayes, 2011)
 - Beef --71 billion
 - Pork --57 billion
 - Corn --44 billion
 - Soybeans --25 billion
 - Poultry --1 billion
 - Wheat --1.8 billion



Secure Food Supply Plans

- Highly Pathogenic Avian Influenza

Secure Poultry Supply

- Secure Egg Supply
- Secure Turkey Supply
- Secure Broiler Supply

- FMD, Classical Swine Fever, African Swine Fever

- Secure Pork Supply

- FMD

- Secure Milk Supply
- Secure Beef Supply



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Goal of Secure Food Supply Plans

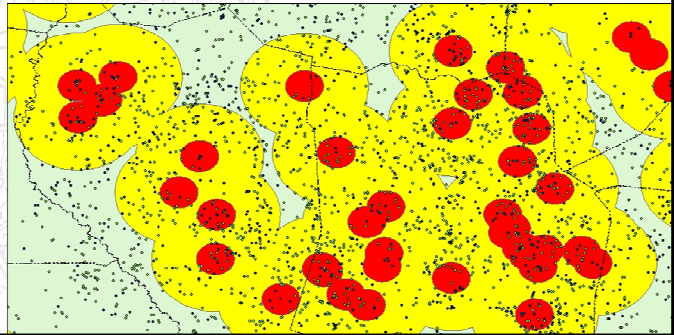
- Detect, control, and **contain** foreign animal disease as quickly as possible
- **Avoid interruptions** in animal/animal product movement to commercial processing from farms with no evidence of infection during FAD event
- Provide **continuous supply** of safe and wholesome food to consumers
- **Maintain** business continuity



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Control Area

- Established around each infected premises
- SFSP work toward enabling movement of animals or products from flocks/herds with no evidence of infection in a Control Area
 - yellow circle; radius 6.2 miles (10 K) or 120 sq miles (310 K)
 - center of red circle is an infected location



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Partnership

Industry

- Provide **input** and allows them to know how they can continue to **provide** food for consumers

Academia

- **Draft** documents (Iowa State U, U Minnesota, Kansas State U, U California at Davis)

State & Federal

- **Review** the plans and **provide** input to help control foreign animal disease

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Secure Food Supply Plans

- Only for guidance
- Pre-outbreak
- Responsible Regulatory Officials will make the decisions based on the events during the outbreak

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10 Components of Secure Food Supply Plans

1. Biosecurity Manager & Written Plan

- Does the site have a biosecurity manager & written plan?

2. Biosecurity Training

3. Protecting the Animals

- Is the site entry restricted? Where is the perimeter buffer area? Where is the cleaning & disinfection area?

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Components of Secure Food Supply Plans (continued)

4. Vehicles and Equipment

- Are the vehicles and equipment clean before entering perimeter buffer areas?

5. Personnel

- Everyone crossing access points has completed log book?

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Components of Secure Food Supply Plans (continued)

6. Animal and Semen Movement

- Animals and semen originate from sources with documented biosecurity practices?

7. Carcass Disposal (prevent attraction to wildlife)

8. Manure Management

- Stored and removed in a manner that prevents exposure to susceptible animals?

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Components of Secure Food Supply Plans (continued)

9. Rodent and Fly Control

- Wildlife and other animals are prevented from entering facilities?

10. Feed

- Grain and feed are delivered and stored in manner that minimizes contamination?

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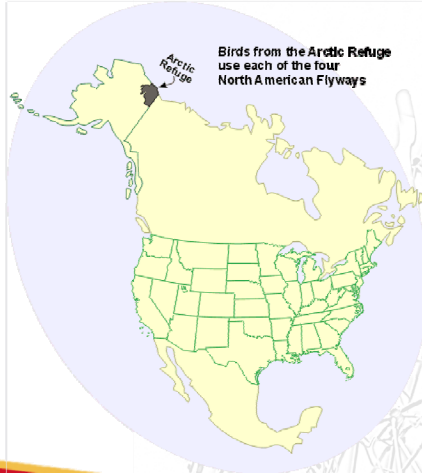
Biosecurity for Novel Diseases

- Producers implement level of biosecurity needed to protect from **endemic diseases**
 - There is herd immunity to most endemic diseases
 - Low levels of pathogen shedding and high levels of resistance
- For **newly introduced highly contagious disease (FMD, CSF, ASF)**
 - No herd immunity
 - High levels of pathogen shedding and low levels of resistance

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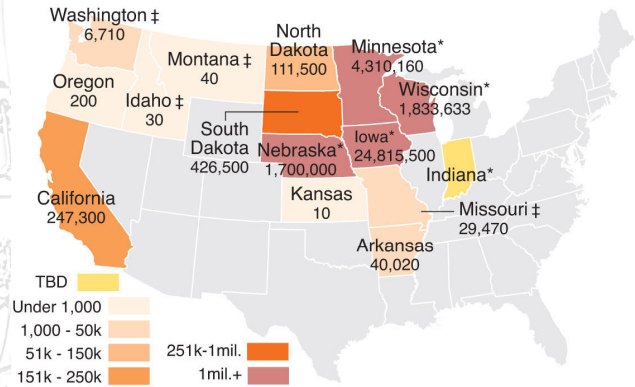
Routine biosecurity practices for newly introduced diseases is not enough

2014-2015: Timeline



Where Bird Flu Has Arisen

There are 15 states with confirmed cases of highly pathogenic avian influenza in domesticated birds since December. The numbers below are the total number of birds, more than 33 million, in affected flocks.



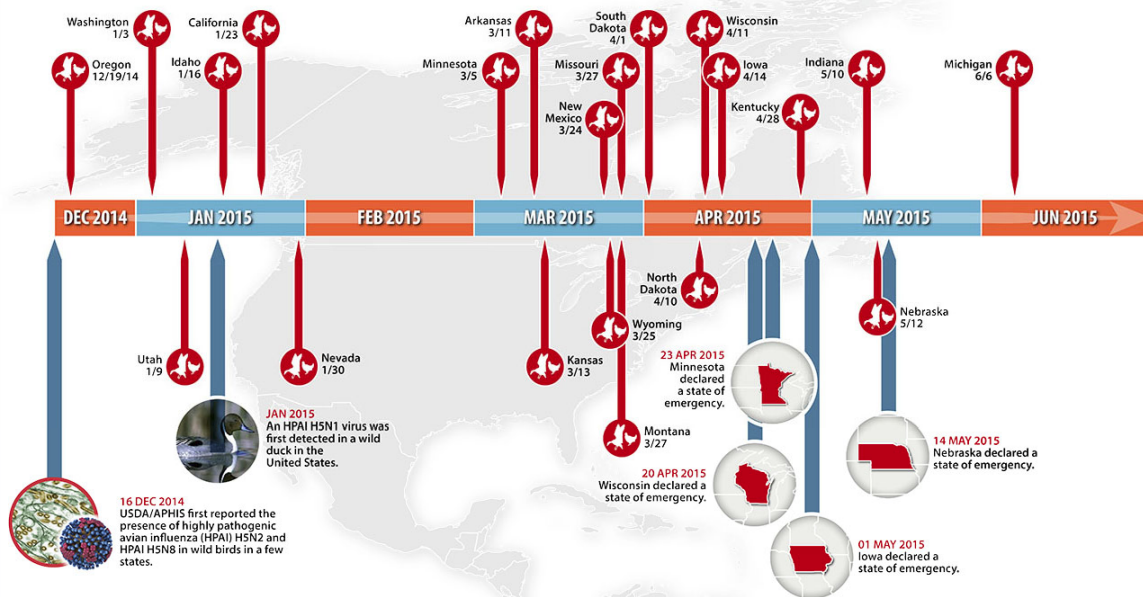
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Source: United States Department of Agriculture

Data through Friday.

THE NEW YORK TIMES / LNP

TIMELINE OF EVENTS IN THE U.S.



Source: The United States Department of Agriculture/Animal and Plant Health Inspection Service (USDA/APHIS)

= First detection of avian flu.

Iowa State University helps



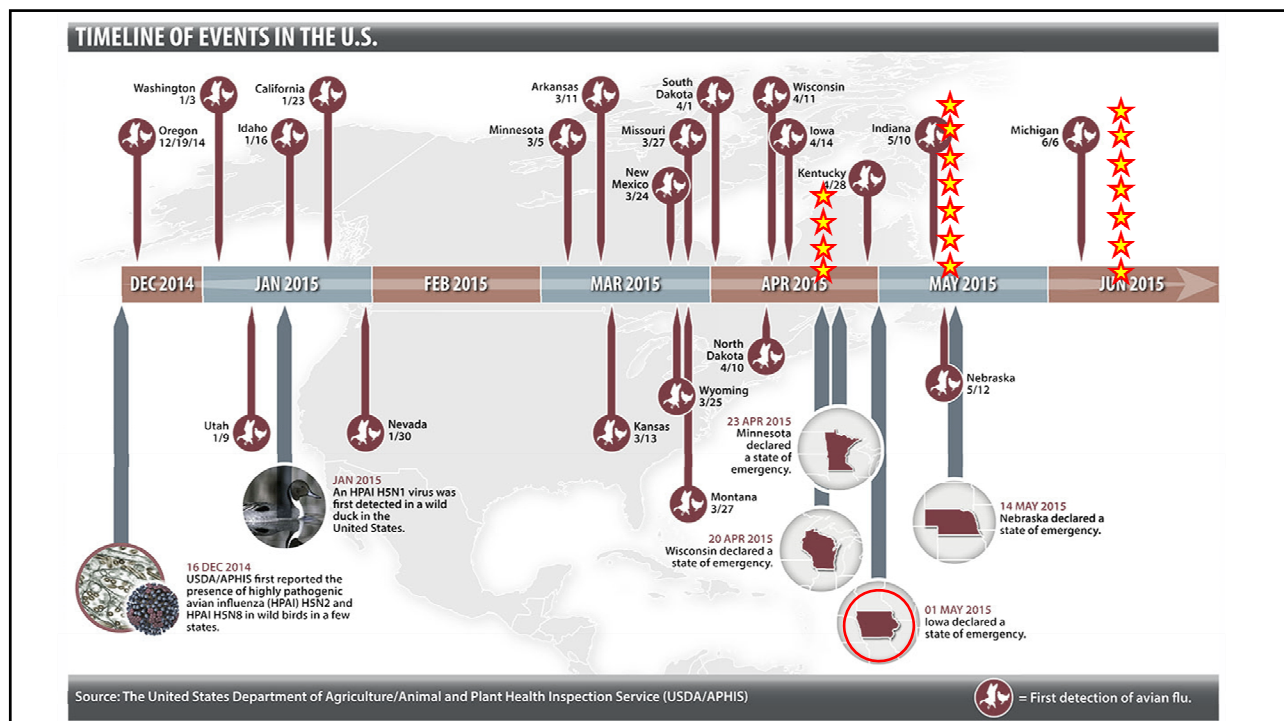
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Respirator training

- Normal
 - 2 trainings a month: Initial and Refresher
 - Researchers, facilities staff
 - Ames Fire and Police Departments
- 2015 Avian influenza outbreak created additional trainings
 - 4 in April
 - 7 in May
 - 7 in June
 - 1 in September



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Additional Respirator training

- 16.5 hrs dedicated to training
- 66 individuals were trained
- ~ 30 more than 2014



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Source:
<https://pixnio.com/science/biology-pictures/scientists-working-on-avian-influenza-surveillance-program>

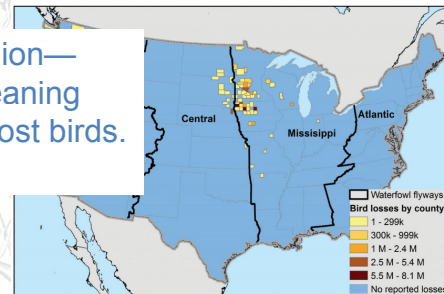
2014-2015 High Path Avian Influenza

- Loss of > 50 million chickens and turkeys due to HPAI (highest ever; 1924-1983 loss of 17 million birds)
 - 12% of U.S. table-egg laying population
 - 8% turkeys used for meat

Federal expenditures totaled about \$879 million—including covering costs for depopulation, cleaning disinfection, and \$200 million in indemnities for lost birds.

Johansen et al. 2016

U.S. flyways and highly pathogenic avian influenza-induced losses in domesticated flocks by county, 2014-15



k = thousand; M = million.
Source: USDA, Animal and Plant Health Inspection Service (APHIS), 2016a; U.S. Department of Commerce, Census Bureau, 2015; and U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS), 2015.

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Conclusions

- Be aware of agricultural commodities in your geographic area
 - These diseases may not be zoonotic but they will challenge our public health system
- Know that biosecurity does not occur only at the laboratory/animal room level
- Partner with Extension Service or industries that may need your assistance during an outbreak
- Look for opportunities and be available to assist

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Thank you!

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