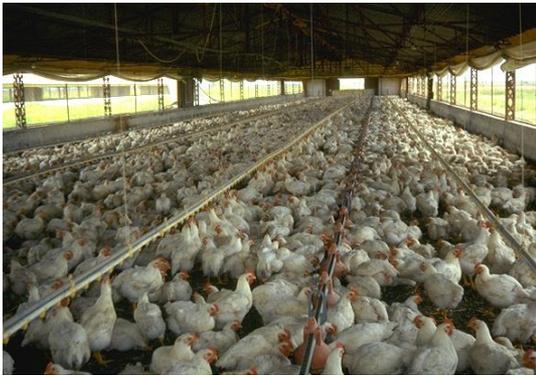


Landfills and Highly Pathogenic Avian Influenza (HPAI) Response



May 2016

USDA APHIS Veterinary Services

“Worst agricultural disaster in decades”

Why does it matter?

- Financial impact of HPAI
 - US, Regional, State economies
 - \$960+ million spent on response since December 2014
 - International trade: several countries banned poultry from the United States
 - Billions in lost exports
 - Direct/indirect impacts-jobs, affiliated industries, emotional impact
- Safe food supply (perception)
 - Safe to eat meat, eggs
- Potential public health issues
 - NOT currently infectious to humans, virus can change

DEFINITIONS

- USDA APHIS Veterinary Services
 - US Department of Agriculture, Animal and Plant Health Inspection Service
 - Veterinary Services oversees pre-harvest animal production
- FAD: foreign animal disease
- HPAI: highly pathogenic avian influenza
 - Also referred to as “high path AI”
 - Differentiated from low pathogenic AI based on morbidity and mortality, or how quickly birds get sick and/or die from the disease
 - Current high path strain in U.S. is mainly H5
- FMD: foot and mouth disease
- PPE: personal protective equipment
- Zoonotic Disease: a disease that can be spread from animals to humans
- Depopulation: also known as “culling” or “stamping out” a large number of animals to quickly eliminate the disease

HOW ARE DISEASE OUTBREAKS HANDLED?

- Is it a disease of high consequence?
 - e.g., High Path Avian Influenza, Foot and Mouth Disease, African Swine Fever, Rift Valley Fever, Glanders
- What is the scope of the outbreak?
 - County, State, Regional, National
 - Can that jurisdiction respond without national assistance (funding, equipment, people)?
- Is it a zoonotic disease?
 - Will humans become infected?
- Who would be the lead agency?
 - Animal Diseases: State Departments of Agriculture, USDA APHIS Veterinary Services
 - Human Diseases: Center for Disease Control and Prevention (U.S. Department of Health and Human Services), State Public Health Departments



WHAT ARE THE GOALS IN A FAD OUTBREAK?

In the event of an FAD outbreak, the three key response goals are:

- 1) Detect, control, and contain the outbreak as quickly as possible.
- 2) Eradicate the FAD using strategies that stabilize animal agriculture, the food supply, the economy, and protect public health and the environment.
- 3) Provide science- and risk-based approaches and systems to facilitate continuity of business for non-infected animals and non-contaminated animal products.

Achieving these three goals will allow individual livestock facilities, States, Tribes, regions, and industries to resume normal production as quickly as possible. They will also allow the United States to regain FAD-free status

USDA Poultry Production Data May 2015

The most recent Census of Agriculture reported **233,770 poultry** farms in the United States in 2012.

In 2014, the U.S. poultry industry produced:

- 8.54 billion broilers,
- 99.8 billion eggs, and
- 238 million turkeys.



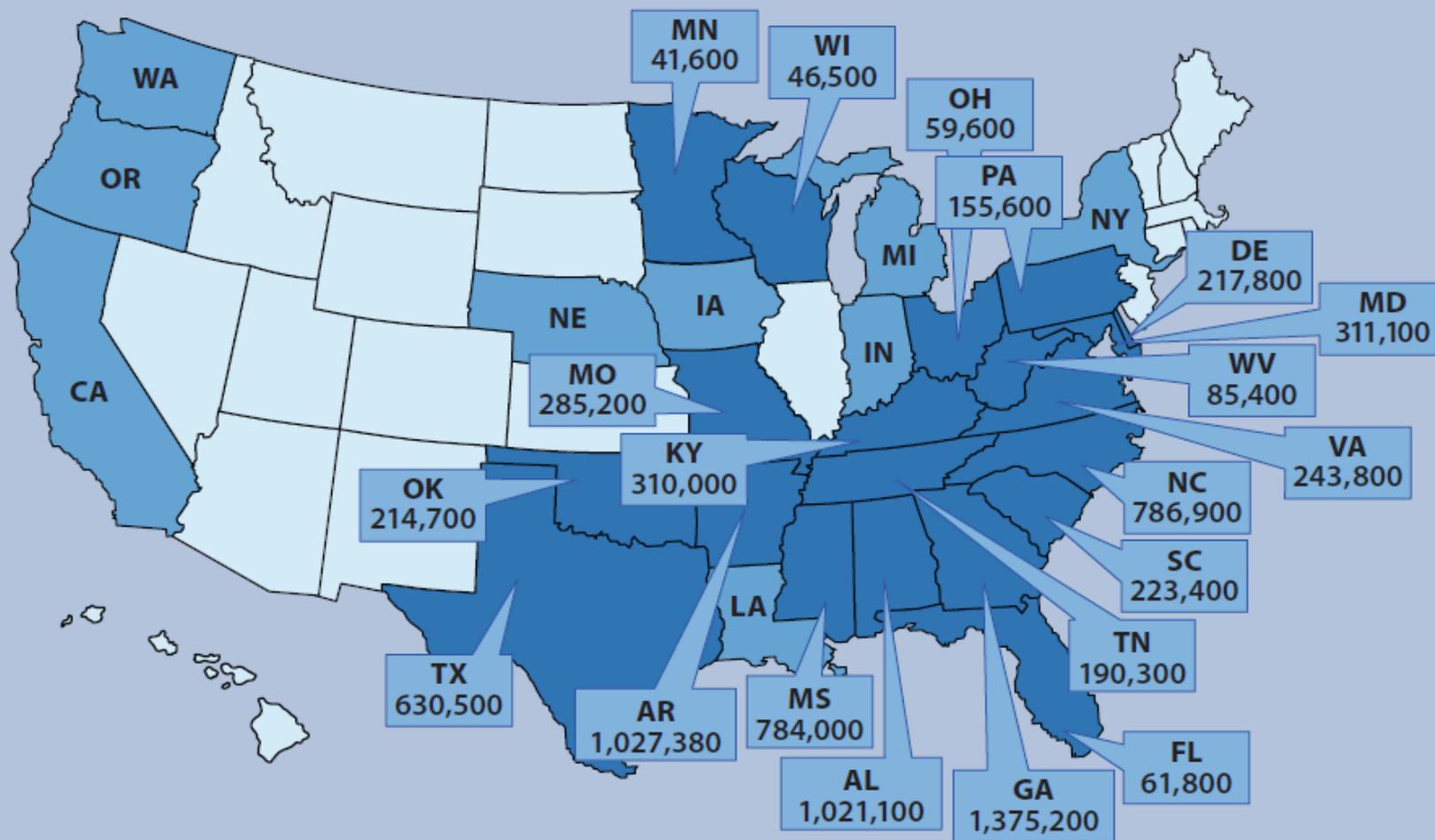
*The combined value of production from broilers, eggs, turkeys, and the value of sales from chickens in 2014 was **\$48.3 billion**, up 9 percent from \$44.4 billion in 2013.*

Today's Commercial Industry

- 8.5 billion meat chickens
- 150 million meat turkeys
- 250 million table egg layers
- 88 million meat type chicken breeders
- 4.5 million egg type chicken breeders
- 8 million breeder turkeys
- 253 meat type chicken hatcheries
- 35 turkey hatcheries



Figure 1. Broiler Production by State Number Produced, Thousand, 2012



U.S. Total: 8.61 Billion Head

8.07 Billion Head, 94% of U.S. Total

All Other Production States



Table 2. Leading Broiler Production States (2012)

<i>National Ranking</i>	<i>State</i>	<i>Billions of Broilers</i>
1	Georgia	1.362
2	Alabama	1.004
3	Arkansas	0.977
4	North Carolina	0.800
5	Mississippi	0.751

**Figure 2. Number of Turkeys Raised, 2010
(Per Thousand Head)**

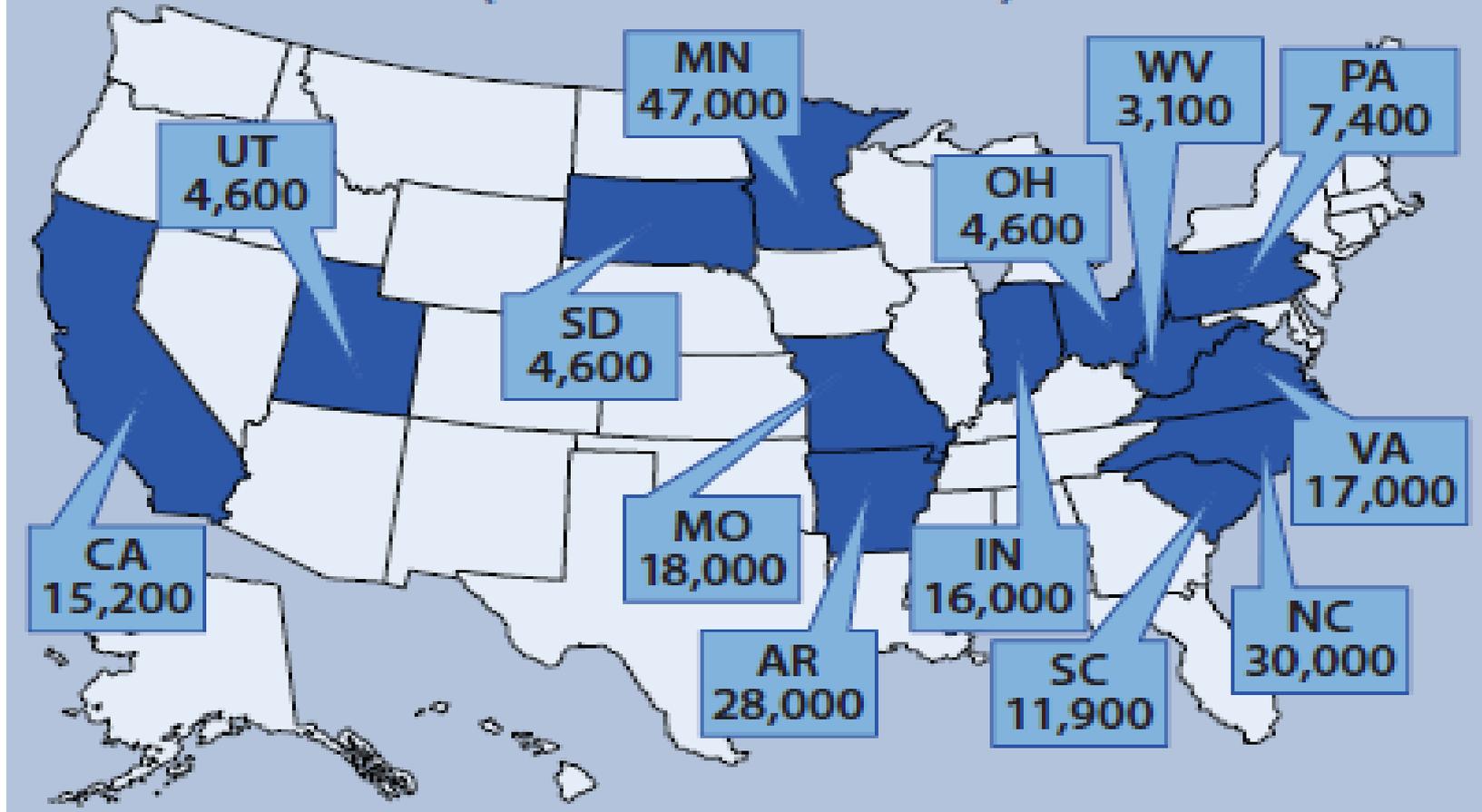




Table 2. Top Turkey Producing States in the US in 2011.

Rank	State	Number of Birds (head, millions)	Pounds Produced (millions)	Value (millions)
1	Minnesota	46.5	1,171.8	799.2
2	North Carolina	32.0	1,132.8	772.6
3	Arkansas	30.5	603.9	411.9
4	Missouri	17.5	568.8	387.9
5	Virginia	17.5	460.3	313.9
6	Indiana	16.0	579.2	395.0
7	California	15.0	421.5	287.5
8	South Carolina	11.5	448.5	305.9
9	Pennsylvania	7.5	174.8	119.2
10	Ohio	5.0	210.0	143.2
11	South Dakota	4.4	180.4	123.0
12	Utah	4.3	97.6	66.6
13	West Virginia	3.3	92.4	6309
	Other	37.5	1,177.4	803.0

Source: USDA, National Agricultural Statistics Service, 2012 Summary

Figure 1. U.S. Turkey Exports (1,000 pounds) by Country from 2006-2010

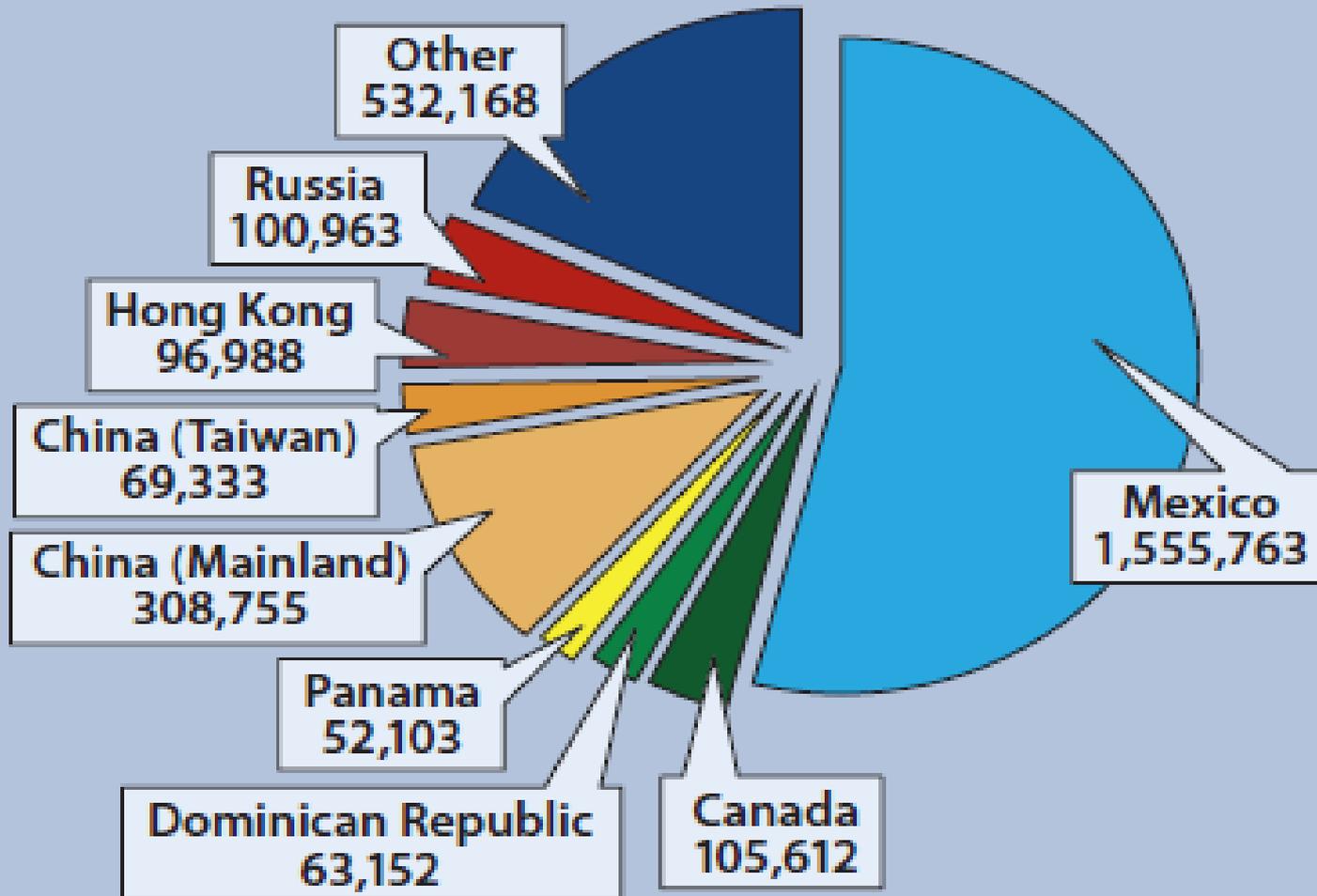




Table 1. Leading Egg Production States (2012)

<i>National Ranking</i>	<i>State</i>	<i>Millions of Layers in Production</i>
1	Iowa	52.3
2	Ohio	26.9
3	Pennsylvania	24.4
4	Indiana	22.8
5	California	18.9

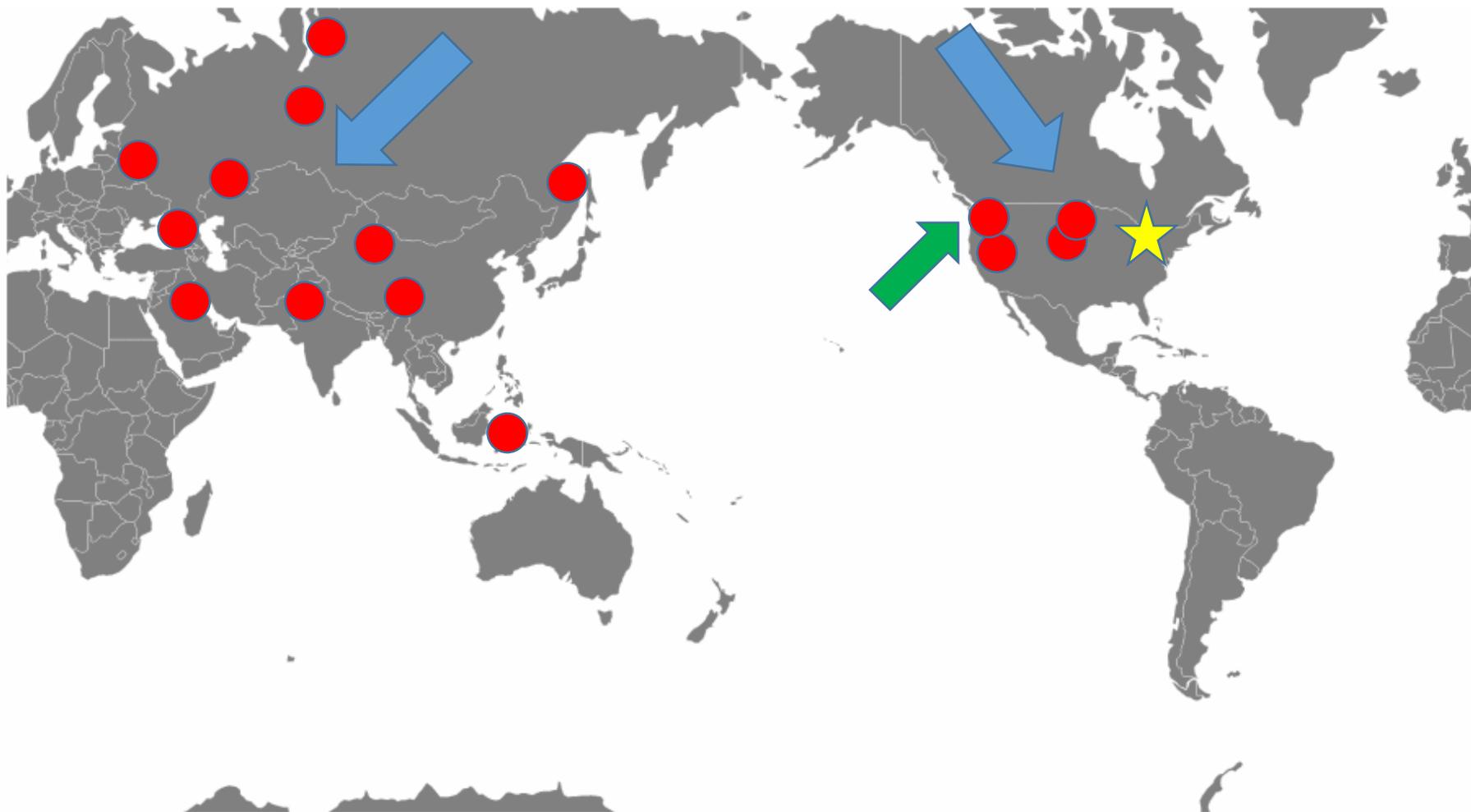
Table 2. Leading Egg Production Companies (2012)

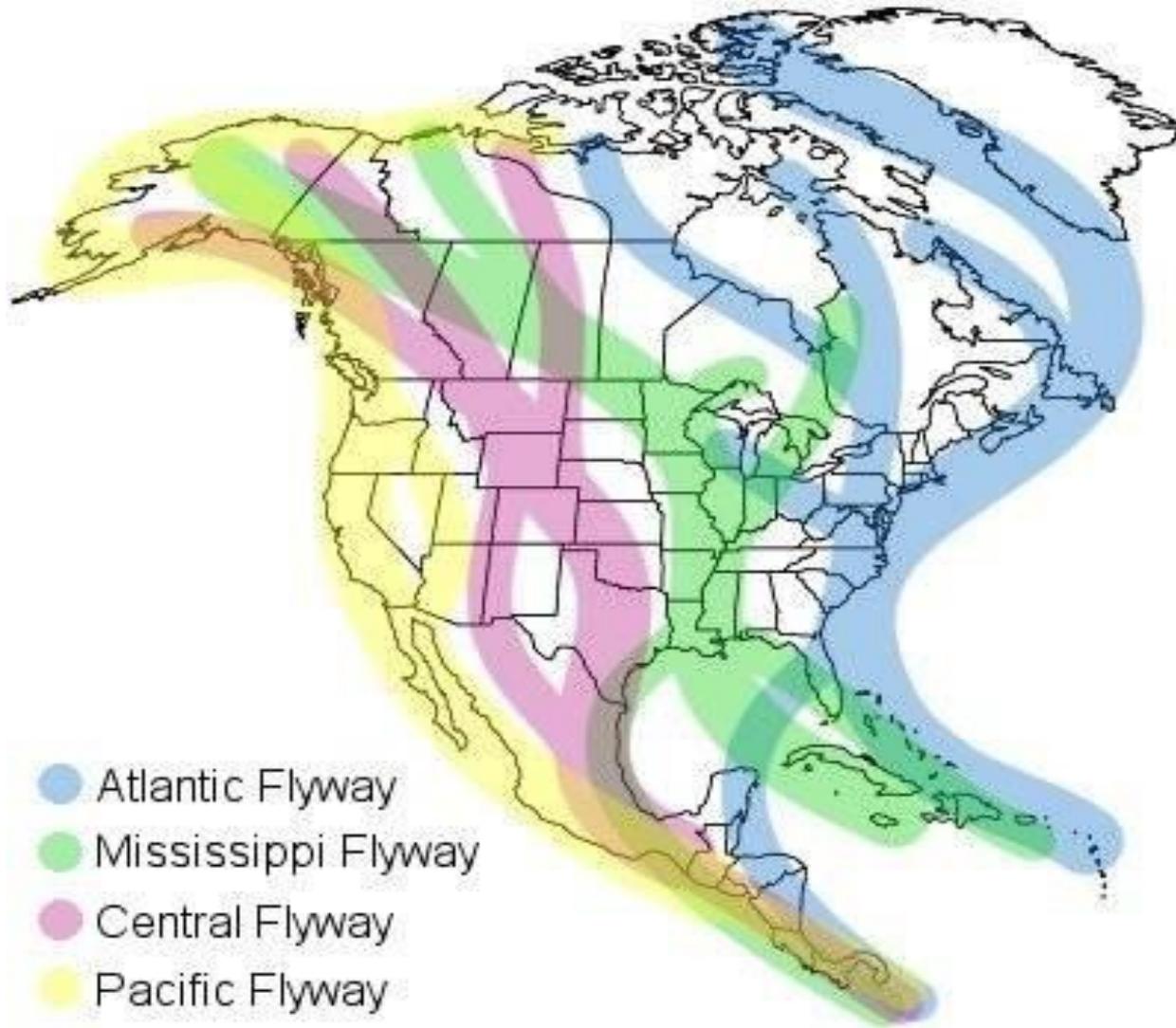
<i>National Ranking</i>	<i>Company</i>	<i>Millions of Layers in Production</i>
1	Cal-Maine Foods	33.5
2	Rose Acre Farms, Inc.	23.7
3	Moark, LLC	14.9
4	Daybreak Foods	13.5
5	Rembrandt Enterprises	13.4

Lesser known poultry industries: game birds, backyard birds, and hobby birds of any species



How did we get here? 2014-2015 and 2016 HPAI Outbreaks







2014-2015 HPAI Outbreak in the United States

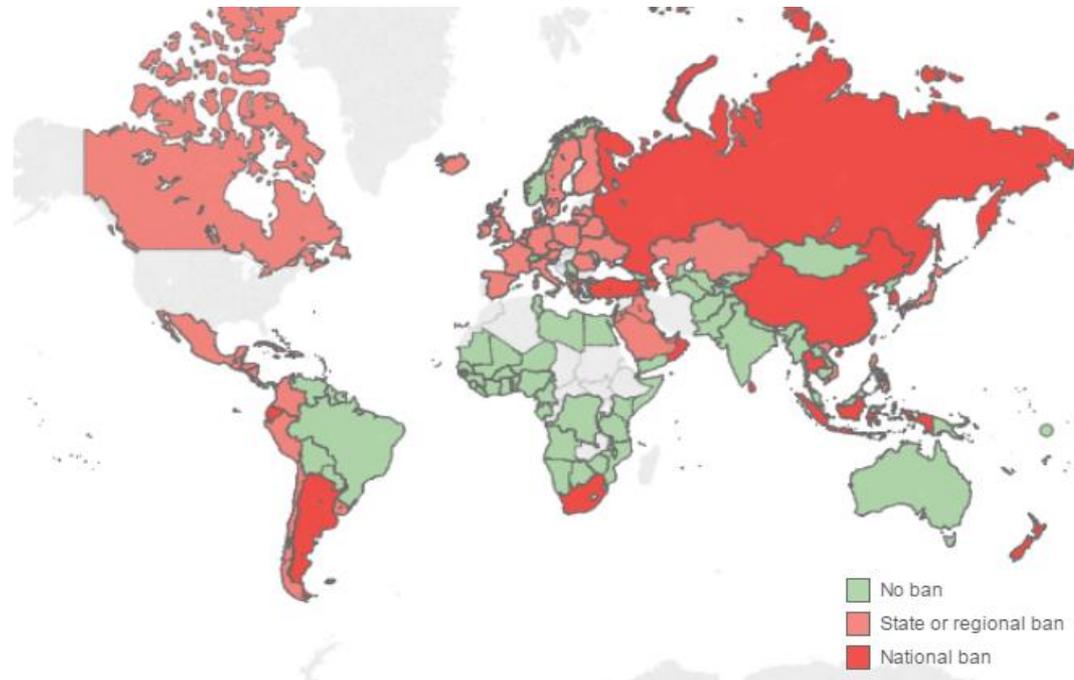
- First case detected in Oregon, December 2014
- Total number of HPAI positive premises: 232
 - 211 commercial (MN-109, IA-72, WI-9, SD-10, NE-5, CA-2, MO-2, ND-2, AR-1)
 - 21 backyard
- Commercial poultry depopulated
 - Turkeys: approx. 7.5 million
 - Chickens, laying hens and pullets: approx. 42.1 million

Impact

- Approximately 10% of the poultry meat and egg supply was destroyed in 6 months in 2015.
- Food prices increased.
- Virus prefers cold, damp weather, so it “slowed down” during the hot summer months (last confirmed positive in Iowa mid-June, 2015).
- Birds that commingle up north will fly south for the winter, potentially exposing wild, commercial, and backyard birds to the virus.

Trade Implications from the 2014-2015 HPAI Outbreak

- Trade impact
 - 18 countries imposed bans on ALL U.S. poultry and products
 - 38 countries imposed partial or regional bans



Trade bans on U.S. exports of broiler and turkey meat related to HPAI as of June 16, 2015 (data from USDA ERS)

2016 HPAI Outbreak

- First case detected January 16, 2016 in Dubois County, Indiana:
 - One case of HPAI in commercial turkeys
 - Nine cases of LPAI in commercial turkeys
 - Strain similar to that seen in wild birds in North America
 - 415,000 birds euthanized
 - Economic cost: over \$20 million.

Does HPAI pose a health threat to humans?

- To date, there have been **no human cases** related to this H5 strain of HPAI (nearly 4300 responders nationwide).
- The Centers for Disease Control and Prevention (CDC) considers the risk to people from these H5/H7 infections to be low. No human cases of these H5/H7 viruses have been detected in the United States, Canada, or internationally.
- Historically, human infections with other avian influenza viruses have occurred after close and prolonged contact with infected birds or the excretions/secretions of infected birds (e.g., droppings, oral fluids), as in SE Asia.

What happens once a farm is infected?

Highly Pathogenic Avian Influenza A Guide To Help You Understand the Response Process



1 Detect

You see unusual signs of illness or sudden deaths in your flock. You report it to your private or State veterinarian. Samples are taken and tested. You find out your flock is positive for HPAI.

2 Quarantine

USDA and State personnel come to your farm. We assign you a caseworker, who will be your main point of contact onsite, answer your questions, and guide you through the needed paperwork. We will also place your operation under quarantine, meaning only authorized workers are allowed in and out, and movement restrictions for poultry, poultry products, and equipment go into effect. We contact neighboring poultry farms and start testing their birds to see if they've been affected, too.

3 Appraise

We work with you to create a flock inventory. This lists how many birds you have, what species they are, their age, and other key details that will help us give you 100 percent of fair market value for your birds.

4 Depopulate

Infected flocks are depopulated as quickly as possible—ideally within 24 hours of the first HPAI detection—to get rid of the virus.

5 Compensate

You receive your first indemnity payment early on in the response process. We also pay you a standard amount for virus elimination activities (cleanup work).

6 Manage Disposal

USDA will help you dispose of the dead birds safely. Disposal methods include composting, burial, incineration, rendering, or landfilling. The options you'll have depend on several things: what type of farm you have, the specific conditions there, State and local laws, and what you prefer.

7 Eliminate Virus

The next step is to wipe out all traces of the virus at your property. To kill the virus, thoroughly clean and disinfect the barn, equipment, and all affected areas of your farm. You can do this work yourself or hire contractors to handle it.

8 Test

As soon as you're ready, let your caseworker know you're finished with cleanup. Your site must then stay empty for at least 21 days. During this time, we'll return to collect and test environmental samples. We need to confirm that your property is completely virus-free.

9 Restock

Once USDA and the State both approve, you can restock your facilities and start production again. State officials will release your farm from quarantine after all required testing and waiting periods are done.

10 Maintain Biosecurity

After restocking, you'll need to continue maintaining the highest biosecurity standards to keep the virus from coming back. For biosecurity tips, go to www.aphis.usda.gov publications and download the factsheet "Prevent Avian Influenza at Your Farm."



How Long Does the Process Take?

Ideally, this entire process could be completed in as soon as 60–120 days. However, the timeframe varies depending on many things (for example, flock size, depopulation and disposal methods used, test results, farm's location). We're committed to restoring production as fast as we can while also protecting poultry health.

Questions?

Talk with your caseworker or the State or Federal officials responding to the disease event in your area.

For general information and contacts, visit:

www.usda.gov/avian_influenza.html
www.aphis.usda.gov/fadprep

Roles of Landfills

With **billions of birds**, seeking landfills that could accept:

- Bird carcasses: adults and pullets/poults (young birds)
 - Adults range from 6-8 lbs (layers & broilers) up to 80 (for tom turkeys)
- Waste products, such as manure and litter (typically shavings or pellets), egg flats, pallets
- Hatchery waste
- Leftover feed
- Eggs and egg product that cannot enter the food supply
- PPE (personal protective equipment such as Tyvek coveralls, gloves, etc.)
- Cleaning and disinfection materials/supplies
- ***Or any combination of the above.***

Disposal needs beyond bird carcasses:



Egg Washing System



Candling of Eggs



Egg Packaging System



Eggs in Cartons and in Boxes

Management considerations at landfill:

Leachate Management

- Storage/recirculation/land application?
- County/state specific
- USDA white paper on risk of leachate expected summer 2016

Operations/Logistics

- Consider working hours, scale operations, tracking AI waste, tipping fees, billing, transportation to and from
- Scheduling delivery of waste
- Use of contractors at landfills
- Clean/disinfection/gray water management

Public Relations/Outreach

- MSW vs. private landfill
- Accepting waste can help protect animal and human health
- Work with State/Fed Depts of Agriculture PIO

Regulations/Permitting

- County/state regulations
- Modification of permits needed?
- Will permitting be handled differently in emergency/disease outbreak?

Use of contractors at landfills:

- USDA contractor responsible for logistics and biosecurity, but rely on landfill operators to assist with identifying local resources.
 - Heavy equipment rentals, power sprayer rentals, frac tanks, tents, gravel for roads and command area, wooden mats, odor control mister, portable toilets, food for workers, etc.
- Landfill needs a system for weighing and tracking AI wastes simultaneously with regular MSW receipts.
- Landfill bills USDA, contractor, or producer (depending on who hired the landfill).



Planning/Operations

- Use landfill staff or contractors for excavation and disposal activities (includes cleaning/disinfection of vehicles)?
- Amount of time necessary to excavate trenches?
- Separate areas for MSW and AI waste staging and disposal.
- Dedicated trucks and decontamination areas for the hot, warm, and cool zones (typically supplied by contractor).
- Ability of farms to stage wastes on-site to control timing of delivery to landfills.
 - Consider both space and container constraints.
- How many loads of wastes can the landfill expect to receive based on the size of farm and the amount of time it takes to depopulate and containerize wastes?
- How will landfill control odor, flies, scavenger birds/wildlife?

On Site Operations



Scale house



Roll-off Staging Area/Access Road



Command Area



Command Area: PPE Supplies



Command Area: USDA and Contractor Office



Full Roll-off Staging Area

Truck tire decontamination in foreground.



Excavated disposal trench



Excavated disposal trench



Full load approaching disposal trench.



Tailgate being unlatched; hot zone delineated by yellow caution tape.



Preparing to dispose of load. Excavator and delivery truck personnel communicate using a series of honks.



Disposal of waste in trench.



Breaching of waste bag: State- or locality-specific regulations.



Constructed road at landfill. Contractors cleaning and disinfecting roll-offs after tipping.



Truck tire decontamination adjacent to a hot zone.



Courtesy Rebecca Joniskan

Decontamination station



Decontamination station: roll-offs are steam cleaned after disposal using a power-sprayer with bleach and surfactant. Decontamination liquids are collected and pumped into a frac tank for off-site disposal.



Decontamination of tarp.



Courtesy Rebecca Joniskan

Removing liner at decontamination station. Disposed of in landfill with other contaminated PPE.



Wooden crane mats.



Wooden crane mats.



Odor control product and mister unit.



Final truck tire decontamination station at facility exit.



Landfill Challenges in 2015 IA Outbreak

- Concerns about risk of infected leachate, protection of operators, public opposition, and potential lawsuits.
- APHIS, state DNR and landfill companies developed waste acceptance criteria to address operational issues.
- APHIS, CDC and NIOSH developed safety guidelines for operators.
- APHIS developed Frequently Asked Questions for public.
- Landfill companies requested federal indemnification but it was prohibited by law.



Lessons learned in Iowa and Minnesota:

- Educate people before a disease outbreak.
- Because of the potential volume of birds and waste materials, large landfills are ideal for birds and smaller ones could take egg or hatchery waste, PPE, etc.
- States worked to modify transportation weight restrictions in case of an outbreak, allowing larger (but still safe) loads to be hauled. States rerouted trucks to avoid passing poultry farms.
- Keep documentation for HPAI operations separate.
- Consider the weather, road conditions, and any extra equipment needed.
- Odor and fly control.
- Work with USDA APHIS LPA or IMT's Public Information Officer to craft appropriate messaging for stakeholders and public.

Support for Landfills

- For any who may be interested in accepting HPAI waste, state, federal and industry partners would work closely to ensure:
 - Worker safety, including in person training and supplying with any PPE needs. **Most important!**
 - Work to establish SOPs for accepting waste that will be beneficial to your operation.
 - Supply contractors if needed to bring in roll-offs and trucks, assist in tipping, cleaning and disinfection, directing traffic, and managing a staging area.
 - *Landfill may be hired by a state or federal government, clean up contractor, or by a poultry grower/company.*
 - We will work with you to manage public perception, prepare for town hall meetings if needed- **landfills could provide a valuable public service by assisting in disposal during an outbreak.**

Interested?

- USDA can supply job aids that have already been developed and can work one on one with landfills to facilitate their involvement
- To start the process of becoming a federal contractor:
 - <http://www.dnb.com/get-a-duns-number.html>
 - www.sam.gov

This process can take several weeks, so please plan ahead.





Other Resources on HPAI and Landfills

Information about HPAI and landfills:

https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/ct_fadprep

https://www.aphis.usda.gov/animal_health/emergency_management/downloads/hpai/landfilldisposalpolicy.pdf

CDC guidelines for landfill workers:

https://www.aphis.usda.gov/animal_health/emergency_management/downloads/hpai/cdc_int_guid_landfill_op_disp_poulcarc_during_outbreaks.pdf

Reach out to your State departments of agriculture, USDA, or poultry producers to let them know of your interest.

Please contact with questions or concerns:

[add presenter's contact information]

