Crystal Clear

One Perspective of Indiana’s 2016 AI Event
We are Building on the Experience of Others
We are Building on the Experience of Others

Or perhaps more like this►

Thanks to the states that preceded us in 2015!
Indiana Avian Influenza Producer Meetings
Spring/Summer 2015

- 03-31-15 - Indiana Emergency Poultry Disease Plan Roundtable Meeting on HPAI
- 04-09-15 - NPIP Blood Testing School, Southern Indiana Purdue Agricultural (SIPAC)
- 04-18-15 - NPIP Blood Testing School, Purdue Campus
- 04-23-15 - Highly Pathogenic Avian Influenza (HPAI) Meeting with Indiana State Agencies
- **05-09-15** - HPAI Diagnosis in a Small Flock in Indiana
- 05-21-15 - Indiana Emergency Poultry Disease Plan Roundtable Meeting on HPAI
- 05-28-15 - Covanta Incinerator Site Visit
- 07-07-15 - Issues and Concerns Meeting of Large Scale Egg Producers
- 08-14-15 - USDA-APHIS-VS Meeting with ISPA
- 08-21-15 - Indiana Board of Animal Health (BOAH) HPAI and ISPA Update Meeting
- 08-25-15 - IN Department of Enviro. Management (IDEM) HPAI Preparedness Update Meeting
Indiana Avian Influenza Producer Meetings
Fall/Winter 2015

• 09-17-15 - ISPA Board Meeting and HPAI Discussions
• 09-18-15 - AI Preparedness Meeting with Purdue Animal Disease and Diagnostic Lab (ADDL)
• 09-24-15 - Indiana Board of Animal Health (BOAH) State Agency HPAI Planning Meeting
• 10-01-15 - ISPA Emergency Disease Response HPAI Planning Meeting
• 10-19-15 - BOAH HPAI Egg Layer and Pullet Permit Meeting
• 10-30-15 - BOAH HPAI Permit Training at ISPA Office
• 11-20-15 - ISPA NPIP Authorized Agent Training for Egg Producers
• 11-23-15 - HPAI & NPIP Update at the ISPA Board Meeting
• 12-08-15 - HPAI Preparedness Meeting with Purdue University
• 12-09-15 - Indiana Board of Animal Health HPAI Meat Bird Permit Meeting
Indiana Avian Influenza **Producer Meetings**
Winter 2016

- 01-14-16 - ISPA Meeting with USDA-APHIS-VS
- 01-14-16 - HPAI Diagnosis in a Small Flock in Indiana
- 01-15-16 - ISPA NPIP Authorized Agent Training for Meat-bird Producers
- 01-19-16 - Southern Indiana HPAI Occupational Health Training
- 01-20-16 - Northern Indiana HPAI Occupational Health Training

▃▃▃ 01-14-16 - State-wide Planning on Hold! ▃▃▃
Agency Meetings through Summer and Fall

- Indiana Board of Animal Health (BOAH) led meetings among the state agencies engaged in an AI Response in Indiana.
- Indiana Department of Environmental Management (IDEM) led meetings with landfills, state agencies, and working with Lori Miller, Environmental Protection Program Manager, APHIS Veterinary Services in Riverdale.
- Canadian Geese Testing with Indiana Department of Natural Resources (IDNR), BOAH, and Indiana State Poultry Association (ISPA).
Individual Meetings throughout the Fall

• BOAH and ISPA representatives met individual producer/processors. The meetings would:
  • Review each premise to:
    • Confirm GPS coordinates
    • Confirm Federal ID numbers
    • Instruct on establishing bar codes for each premise for submission of samples
  • Educate on the use of Indiana Movement Permits
  • Establish electronic signature authority
NPIP antigen capture pre-movement surveillance testing for avian influenza was negative for the index premises.
Thursday, January 14

Even in an emergency, sometimes things just workout right.

- That morning BOAH had scheduled a meeting to review premise data and permitted movement protocols with the producer with the index flock.

- Meanwhile, I was meeting with Indiana Veterinary Services office to provide an update on Indiana’s AI preparation activities.
While addressing the VS office I could not ignore the second of two consecutive calls from one of our turkey companies. When I took the call I learned we had spiking mortality in one flock:

• The index site consisted of 4 grow-out houses, each with approximately 5,100; 135 day-old tom turkeys.

• In addition to the grow-out facilities the index premise included <18,000; 45 day-old toms in two brooder barns.
Clues

- Only the grow-out barn at the end of the four house line, exhibited symptoms or increased mortality:
  - January 10, reduced water consumption was observed which continued
  - January 13, mortality in the house jumped to 100
  - When first reported on the morning of January 14, mortality was 500, by the end of the day it had reached 800
- A Dangerous Contact Premise was 1 mile away with >22,000; 25 day-old toms.
Zone Defense - 10 km Control Zone

• The 10 kilometer Control Zone Contained:
  • 50 turkey facilities
  • 15 egg-laying houses
  • 1 off-line egg breaking processing facility producing only pasteurized egg products
  • 2 feed mills

• Sample collection and testing in all of the barns was initiated immediately.

• The egg company tested all flocks in or near the control zone feeding eggs into the plant and all tests have been negative.
Entering the Infected Site
Zone Defense - 10 km Control Zone January 14

• Oropharyngeal swabs from the affected barn taken by company NPIP Authorized Agents

• Confirmed weak positive for AI on ACIA at Heeke Animal Disease Diagnostic Laboratory

• Oropharyngeal swabs from affected barn and from a dangerous contact site transported to Purdue University NAHLN Lab (ADDL) for testing, and flown to NVSL in Ames, IA for confirmation

• Samples from affected barn tested presumptive positive H7 at Purdue University’s NAHLN Lab
Zone Defense - 10 km Control Zone January 15

• Confirmation of HPAI H₇N₈ positive samples completed at NVSL

• Infected premise was quarantined

• Premises were identified within 3 and 10km distance from infected farm

• Three commercial companies with premises within control area began sampling and submitted samples from control area.
Unified Command involving IN BOAH/Incident Management Assistance Team (IMAT)/ IN DHS and USDA-APHIS-Veterinary Services. The ICP was located on the Jasper Campus of Vincennes University.
Unified Command on the Jasper Campus of Vincennes University
A Staging Area for equipment and field personnel was established at the Dubois County Fairgrounds, Huntingburg, IN.
• Of the additional samples collected from premises within the 10 km control zone, eight additional commercial turkey flocks were confirmed at NVSL for H7N8 LPAI.

• One suspect positive result from a ninth premises could not be confirmed by partial sequencing. Virus isolation results on samples from the ninth premise are negative, but the flock was handled the same as the other H7N8 LPAI flocks.
The Infected Flocks were in an Area less than 10 miles²

Each of the HPAI and LPAI Flocks of the Indiana Incident were within an area
- 7.01 miles North to South by
- 1.4 miles East to West

Compare that are within Kansas City...
7.01 Miles by 1.40 Miles, 9.85 Square Miles
The H₇N₈ Avian Influenza Viruses

• The partial sequences of the LPAI and HPAI H₇N₈ viruses were nearly identical except for the HA gene insertion which imparts high pathogenicity to the HPAI virus. While LPAI was detected in these additional flocks, the potential risk remained the same, as this virus has a high potential to mutate to HPAI and appropriate actions needed to be taken.

• The index case of H₇N₈ HPAI and subsequent detection of H₇N₈ LPAI, are of North American wild bird lineage with high similarity to other wild bird viruses from Midwest and western states between 2011 and 2013.
The H₇N₈ Avian Influenza Viruses

• Both the H₇N₈ HPAI and LPAI are highly similar across 6 of 8 gene segments to a recent wild bird detection H₇N₈ LPAI in Kentucky at the end of November (lesser scaup collected 11/28/15).

• North American H₇N₈ LPAI virus has been detected previously in wild bird surveillance in the United States, but this is the first instance of H₇N₈ HPAI virus detection in any species.
The $H_7N_8$ vs $H_5N_2$ Avian Influenza Viruses*

<table>
<thead>
<tr>
<th>Virus</th>
<th>Incubation</th>
<th>Bird Infectious Dose 50</th>
<th>Ability to Infect</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_7N_8$</td>
<td>Indiana 2-3 days</td>
<td>$10^4$ BID50</td>
<td>Much more infectious than $H_5N_2$ in turkeys, similar in chickens</td>
</tr>
<tr>
<td>$H_5N_2$</td>
<td>Minnesota 5-7 days</td>
<td>$10^6$ BID50</td>
<td>Not as infectious in turkeys or chickens as the $H_7N_8$</td>
</tr>
</tbody>
</table>

*Dr. David Suarez, USDA, Agriculture Research Service*
Zone Defense - 10 km Control Zone

• Depopulation of all poultry on the infected index premises completed on January 16.

• 10 barns containing a total of 62,000 birds were depopulated at the index premises and an additional dangerous contact premises that had shared personnel.
Federal Foaming Equipment

A KIFCO Unit, One of 21 Foamers Delivered from the Federal Veterinary Stock Pile.
Zone Defense - 10 km Control Zone

- January 16 - Door-to-door sampling and surveillance was initiated
  - The first round of testing was completed in 6 days, repeated 2 weeks later.
- By January 24 - 1,945 households were visited
  - utilizing 38 grids of 2x2 miles.
- 105 small flocks were found, quarantined, and tested negative.
- These flocks were retested 14 days later with the same result.

- IDNR sampling: hunter harvest birds & migratory waterfowl environments
Zone Defense - 10 km Control Zone

• A Dangerous Contact layer flock of 156,000 hens which tested **negative** for AI was depopulated on January 19. The carcasses were taken to the landfill.

• By January 20, all H7N8 AI positive flocks - 258,000 turkeys - were depopulated and are being composted in house.
Checking into the Staging Area

Checking Name Tags

Monitoring Vehicular Traffic
• On January 16 - BOAH established a surveillance zone extending 10 km beyond the boundary of the Control Area.

• Commercial poultry premise surveillance in the Surveillance Zone:
  1. Each premises was sampled and AI tested according to USDA surveillance guidance
  2. Originating premises were AI tested within 24 hours prior to any movement of market age turkeys or table eggs from a premises in the surveillance zone to processing
Zone Defense - 20 km Surveillance Zone

• Producers are doing additional testing in areas of concentrated production outside of the 20 km Surveillance Zone.

• IDNR conducting opportunistic sampling of wild birds throughout the 20 km surveillance zone.
The H$_7$N$_8$ Avian Influenza Flocks

- Compost was capped for all premises as of February 1

- The final flock plan was signed February 3

- VS Blue IMT transferred command to Unified Indiana Team on 02/17/2016
The H₇N₈ Avian Influenza Flocks

• 6 rounds of AI tests were completed in all commercial flocks within the Control Zone

• Payments for depopulation were made within 24 days of diagnosis.
The H$_7$N$_8$ Avian Influenza Flocks

- Control Zone lifted - Monday, February 22
- OIE AI Free Date - Monday, May 2, 2016
- 11 of 12 premises have completed Cleaning & Disinfection. Environmental sampling activities are ongoing.
The $H_7N_8$ Avian Influenza Flocks

- 10 of 12 premises have had negative environmental sampling results returned.

- BOAH has released quarantine orders for 4 of the 12 infected, presumptive positive, and dangerous contact premises.

- 4 of 12 premises have been granted restock approval.
Long Hours, Long Weeks, Long Months...

A swift caffeine delivery system is important at the Incident Command Post!
Zone Defense

**Control Zone:**
- 65 Commercial Poultry Premises
- 1 Egg Breaking Plant
- 2 Feed Mills
- 105 Small Domestic Flocks
- 414 Thousand Birds Affected
- 1,945 Residences Visited

**Surveillance Zone:**
- 60 Additional Commercial Poultry Premises

**Total Control & Surveillance:**
- 233 Total Poultry Premises
Facts & Figures

• Control Zone Lifted Monday, February 22
  • 38 days after initial diagnosis
  • 21 days following the last compost set

• 4,500 AI PCR Tests Completed

• Samples Delivered Daily to ADDL by Indiana State Police Pilots or Drivers
Facts & Figures of Epidemiological Interest

• 9 - Confirmed H$_7$N$_8$ flocks, each on a hill top

• 6 - Field technicians responsible for 1 or more flocks prior to infection
  ▪ 1 - Field technician per flock
  ▪ The 6 field technicians with AI(+) flocks were also responsible for several AI(-) flocks
Facts & Figures of Epidemiological Interest

• 3 - Feed mills providing feed
  ▪ 1 - Feed mill per flock

• 3 - Truck washes - one at each feed mill, used prior to each feed delivery
Facts & Figures

• Environmental samples of 11,350 surfaces over 12 site
• 516 ICP, Staging, & Field Personnel at peak
• 738 Permitted Movements to 9 states
• 414,000 birds depopulated
• Low level (risk) prisoners assisted in depopulation
• Commercial producers completed 6 rounds of testing each flock in the control zone
Lessons Learned - 2016

• Invert your focus in an AI incident:
  • The focus needs to be on ensuring that product moves from the healthy premises, since we know the AI (+) birds are going to be depopulated

• Plan on utilizing multiple redundant depopulation methods

• At subfreezing temperatures water-based depopulation methods may pose significant challenges

• As with Case Managers, Subject Matter Experts need to remain through end of their task for each group of facilities they oversee
What Worked Well

• **The Community Spirit** - Federal and State authorities converged from all over Indiana and the U.S. They were warmly received throughout the duration of the AI event. The Community supported the work being done and valued the poultry industry that surrounds them. It was rewarding for those visiting

• **Strong Industry Leadership** - Planning and making difficult decisions in the company plan, then following through on that plan
What Worked Well

- **Local Leadership**
  - Indiana District 1 Incident Management Assistance Team
  - Indiana District 9 Incident Management Assistance Team
  - Indiana District 10 Incident Management Assistance Team
  - Dubois County Emergency Management Agency
  - Dubois County Fairgrounds
  - Dubois County Public Health Department
  - FSA Office of Dubois County
  - Vincennes University, Jasper Campus
Indiana Incident Management Assistance Teams
What Worked Well

**State Leadership**
- Board of Animal Health - Lead Agency

**Supporting Agencies**
- Purdue University Animal Disease Diagnostic Lab
- Department of Homeland Security
- Department of Corrections
- Indiana State Police
What Worked Well

Supporting Agencies

• Department of Transportation
• Department of Environmental Protection
• Department of Natural Resources
• Department of Health
• Department of Agriculture
• Indiana State Poultry Association
  • National Poultry Improvement Plan
What Worked Well

- The Leadership and Active Engagement of 12 State Agencies
What Worked Well

• The Active Support of 4 Federal Agencies

[Logos of FSA, USDA, NRCS, and Wildlife Services]
What Worked Well

• Active Engagement of Producers in all Decisions

• Planning and Meetings, more Planning, More Meetings, then **Repeat!!!**
Crystal Clear
Photo courtesy of Dr. Jodi Lovejoy, BOAH

Thank you
Paul Wm. Brennan
Indiana State Poultry Association