

# Challenges in Safeguarding Against Avian Influenza

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*Agricultural Outlook Forum*

*Science, Policy, Markets – What's Ahead?*

February 24, 2005



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# Introduction

## *Infectious Agent Challenges*

Avian Influenza (AI) Biology & Epidemiology

## *Human Challenges*

International Trade & Human Health concerns

## *Policy Challenges*

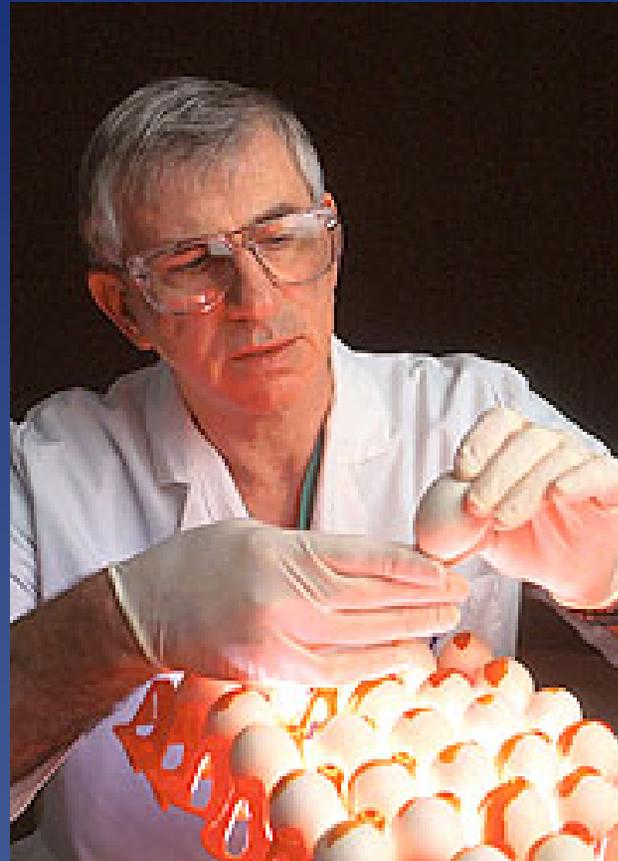
International Definition of AI & Development of Domestic AI Program



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# Infectious Agent Challenges



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# AI Biology

Influenza A; 15 H and 9 N subtypes

Segmented RNA genome; highly mutable

Highly Pathogenic AI

- Severe systemic disease; high mortality
- H5 & H7 subtypes

Low Pathogenic AI

- Respiratory & GI; few clinical signs
- Any subtype, including H5 & H7



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# AI Biology – Risk Factors

Wild waterfowl and shorebirds serve as natural reservoir

- Backyard and commercial poultry at risk of exposure

H5 & H7 LPAI can mutate to HPAI

Transmission can occur from poultry to swine and/or humans



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# AI in the Live Bird Markets

Low pathogenicity H7N2 AI (LPAI) has been isolated frequently from live bird markets in the NE since 1994.

- Approximately 120 markets in NY, NJ and New England
- Approximately 25 million birds marketed annually

LBM's also present in TX, CA, FL, MN and probably other States



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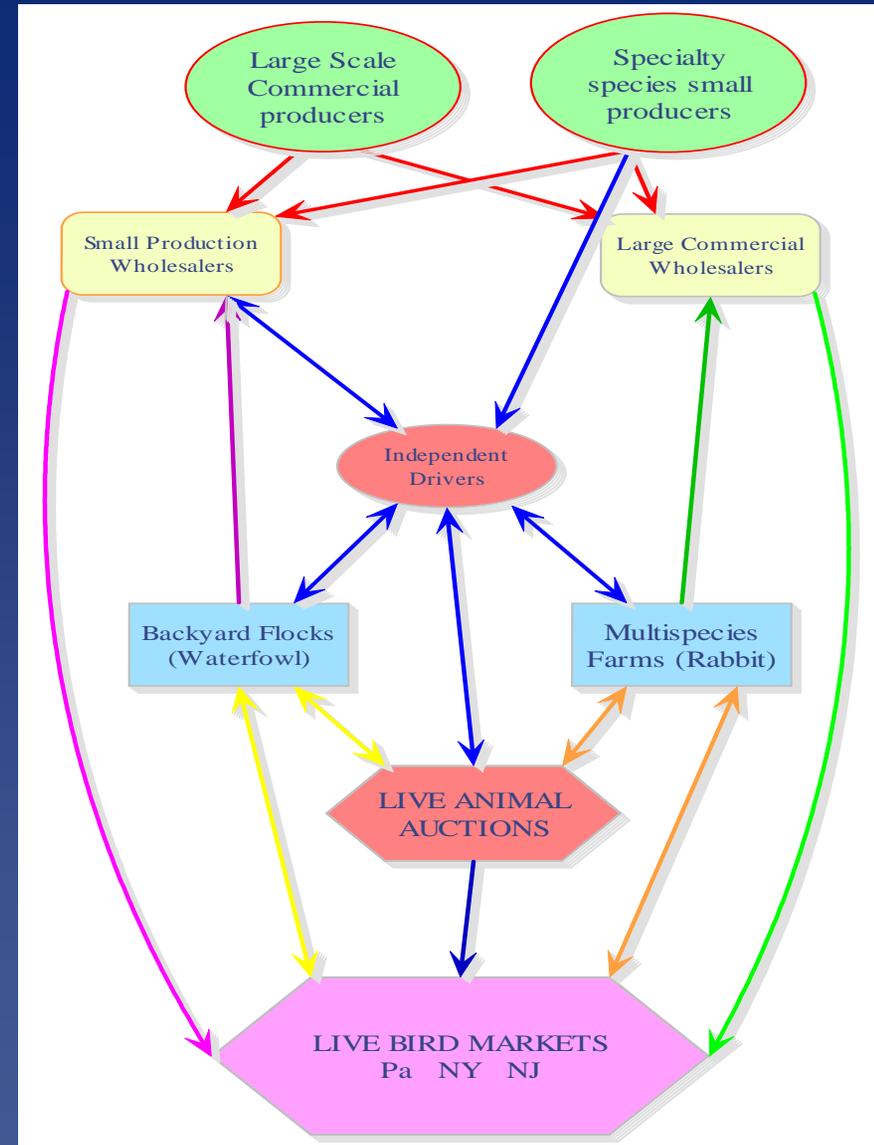
## AI Epidemiology – Live Bird Markets



State control programs require marketing of AI negative birds.



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Courtesy of Dr. Ernie Zirkle



# H5/7 AI in Commercial Flocks Linked to Live Bird Marketing Systems

## LPAI: (H7N2)

1996-98: PA (47 flocks, 2.5 M birds)

2001: CT (1 flock, 16,000 birds)

2001-02: PA (7 flocks)

2002: VA, WV, NC (210 flocks, 4.7 M birds)

2003: CT (4 flocks, 4.5 M layers)

2004: DE, MD (3 flocks, about 500,000 birds)

2004: TX (H7N3; 2 flocks)

## H5PAI: (H5N2)

2004: TX (1 flock)



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# HPAI Occurrences Outside of the USA

Mexico: 1995 – 2001 (H5N2)

Australia: 1997 (H7N4)

Asia: 1997 – 2005 (H5N1)

Italy: 1999-2000 (H7N1)

Netherlands: 2003 (H7N7)

Chile: 2002 (H7N3)

British Columbia: 2004 (H7N3)



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# Human Challenges



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# 5 countries currently have trade bans on U.S. poultry products because of LPAI

- Japan, Korea, Russia: CT and RI only
- Cuba: All northeastern States
- Mexico: 8 States (NC, PA, VA, WV, TX, ME, CA, CT)



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# Transmission of AI to Humans

Historically, H1, H2, H3 human pandemics have followed adaptation of AI viruses to swine



Recently, H5 and H7 human infections have resulted from direct transmission from poultry (Asia; The Netherlands; Canada)



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# History of Transmission of HPAI Viruses from Poultry to Humans

Hong Kong: 1997. H5N1. 18 cases, 6 deaths.

Netherlands: 2003. H7N7. One death and more than 80 mild infections with ophthalmitis and respiratory signs

Asia: 2003-2005. H5N1. 55 human cases reported, with 42 deaths, in Thailand, Viet Nam, and Cambodia.

British Columbia: 2004. H7N3. 2 Human cases confirmed. No deaths.



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# Status of HPAI H5N1 in Asia in Poultry

Since Dec 2003, 10 Asian countries have reported HPAI H5N1 in poultry (Thailand and Viet Nam continue to have new infections)

More than 140 million birds have died or been destroyed

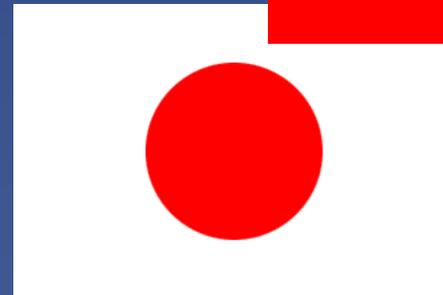
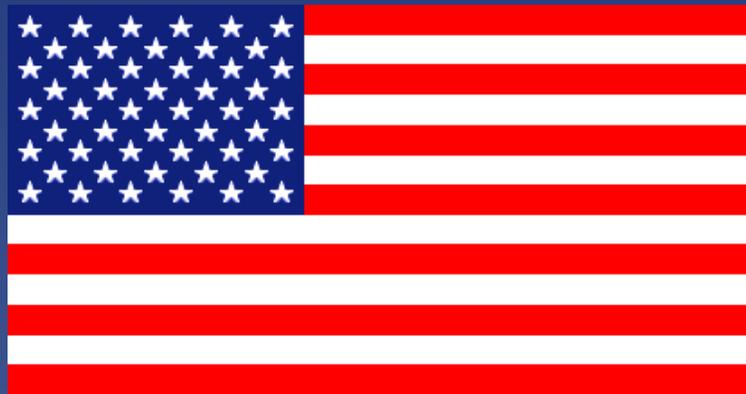
*USDA and CDC have banned the importation of all birds into the U.S. from affected countries*



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# Policy Challenges



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# AI International Standards: World Organization for Animal Health (OIE)

## Current OIE Code Chapter on AI:

- High Path AI required to be reported

## Changes to be considered at May 2005 meeting:

- All H5 and H7 AI would become notifiable
- Would allow compartmentalization of poultry industry for notification purposes, based on surveillance
- Trade restrictions would be appropriate to risk



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# Notifiable LPAI Standards must be Science- and Risk-based

Agricultural Research Service studies in press and other research shows

- No NLP AI in meat or eggs of infected birds
- NLP AI artificially inoculated into egg products can be inactivated at standard pasteurization time and temperatures

USDA risk assessments show near zero risk of NLP AI spread through trade in poultry and poultry products



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# Protection of Domestic Flocks and Adherence to International Standards

Must be based on national surveillance and control programs.

Active and Passive surveillance currently conducted by various means

USDA is developing:

- National NLP AI monitoring program for all aspects of the commercial poultry industry
- National NLP AI prevention and control program for the live bird marketing system



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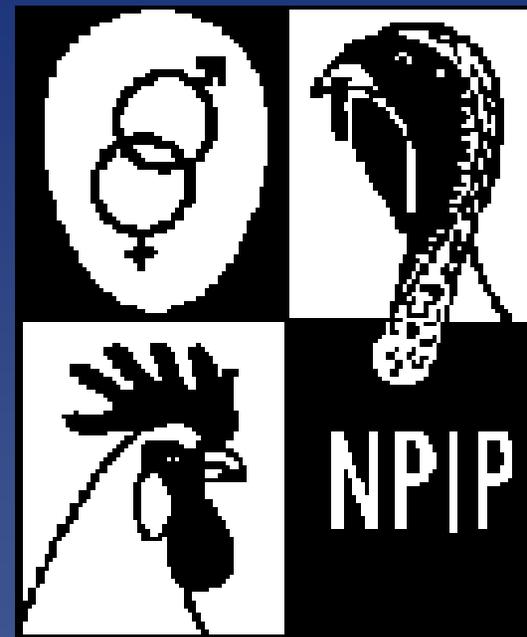
# Commercial poultry program

H5/H7 LPAI surveillance program under development through the National Poultry Improvement Plan (NPIP)

- Broilers & Turkeys – AI Monitored certification program, based on slaughter plant serology
- Table egg layers – AI Monitored certification program based on annual flock serology
- Depopulation and indemnification if positive facilities found

LPAI programs for chicken & turkey breeders already in place

Vaccine bank under development



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# Live Bird Market System Program

Uniform standards to provide guidelines for markets, dealers and producers:

- Licensing requirements and education
- Bird testing and recordkeeping
- Sanitation and biosecurity
- Surveillance and inspections
- LPAI positive facilities

States must require participation



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# Thank you for your attention!



For more information, visit our website at [www.aphis.usda.gov](http://www.aphis.usda.gov)



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