Center for Epidemiology and Animal Health Update

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Committee on Poultry and Other Avian Species
Veterinary Services
USDA, APHIS
Epidemiologic Study Design Support

Request from National Turkey Federation

OBJECTIVE: Estimate the seroprevalence of infectious bursal disease (IDBv) in U.S. turkeys going to slaughter

Ohio State University: Testing

CEAH: Study design review and analysis

Biological samples are currently being collected. Collection to be completed by early calendar year 2020.
Virulent Newcastle disease data flows for decision support

Epidemiologic analyses supporting data-driven decision support

- Field surveys
  - Epidemiologic surveys, field and GIS intelligence
- Electronic and Mobile devices
  - EMRS2Go, EMRS, Backyard App
- Online media
  - Social media and internet-based data
- Other indicator data sources
  - Climate and environmental data, historical outbreak data
- Monitoring and Analysis
  - Data analysis, information technology dashboards
- Laboratory data
  - Electronic messaging, genetic data analysis
- Remote Data Collection
- Data Integration, Investigation and Intelligence
- Data-driven decision making

Information feedback and dissemination

USDA U.S. Department of Agriculture

Veterinary Services Animal and Plant Health Inspection Service
vND data-driven decision support products

Population at risk

Epidemiologic risk

Surveillance

Genetic analysis and diagnostics

U.S. Department of Agriculture
Veterinary Services    Animal and Plant Health Inspection Service
vND data-driven decision support products

Population at risk
- Predicted backyard poultry ownership
- Spatial-temporal analysis

Epidemiologic risk
- Rapid risk assessments
- Case-control/risk factors
- vND transmission risk
- Estimating disease spread

Surveillance
- Identifying control areas
- Monitoring progress
- Surveillance design
- Depopulation strategy

Genetic analysis and diagnostics
- Phylogenetic analysis
- Population coverage
- Prevalence/epi curve
- Feather sampling

vND Disease Freedom Testing Strategy

Population at risk
- Predicted backyard poultry ownership
- Spatial-temporal analysis

Epidemiologic risk
- Rapid risk assessments
- Case-control/risk factors
- vND transmission risk
- Estimating disease spread

Disease monitoring
- Identifying control areas
- Monitoring progress
- Surveillance design
- Depopulation strategy

Genetic analysis and diagnostics
- Phylogenetic analysis
- Population coverage
- Prevalence/epi curve
vND Disease Freedom Testing: Surveillance Design

Representative

- Random Sampling
- Control Areas
- Regional Quarantine Area

Risk-Based

- High Risk Sampling
- Low Risk Sampling
- Control Areas
- Regional Quarantine Area
vND Disease Freedom Testing: Surveillance Design

Representative vs. Risk-Based Sampling

- **Representative**:
  - Random Sampling
  - Control Areas
  - Regional Quarantine Area

- **Risk-Based**:
  - High Risk Sampling
  - Low Risk Sampling
  - Control Areas
  - Regional Quarantine Area
vND Disease Freedom Testing: Surveillance Design

- Spatial Distribution of Risk Factors
- Disease Transmission Risk
- Disease Prevalence
- EMRS
- Population at Risk

Risk-Based

- High Risk Sampling
- Low Risk Sampling
- Control Areas
- Regional Quarantine Area
vND Disease Freedom Testing: Risk-Based Surveillance

- Spatial Distribution of Risk Factors
- Disease Transmission Risk
- Disease Prevalence
- EMRS
- Population at Risk

↓ # Samples
↑ % Savings and Efficiency
↑ Disease Freedom Confidence

- High Risk Sampling
- Low Risk Sampling
- Control Areas
- Regional Quarantine Area
HPAI/LPAI Epidemiologic Investigations

- Within Flock Disease Spread
- Time to Detection based on Mortality or Clinical Signs
- Predicting Time of Disease Introduction
- Wild bird Surveillance Results
- Virus Persistence in the Environment
- Risk Factors for Disease Spread between Farms
Thank you

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