



United Egg Producers

Leadership by Egg Farmers for Egg Farmers



UEP Biosecurity Task Force Resources For Egg Producers

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HPAI Task Force Update

During the UEP meeting in January, the Animal Health and Biosecurity Committee passed a motion directing staff to form an HPAI Task Force to look at additional measures that our industry could undertake to help prevent the virus from infecting egg farms. The board approved this motion, and we immediately began working to form this task force.

Through a scenario planning exercise and several meetings, the HPAI Task Force identified several opportunities for the industry to explore, including the enhancement of biosecurity on farms.

This package you are receiving includes a biosecurity plan development tool from Iowa State, along with additional recommendations for you to consider implementing to strengthen your current measures.



As this virus is beginning to show up in the spring migration, now is the time to revisit your biosecurity plans by implementing additional protective measures to keep the HPAI virus outside the line of separation you have established on your farms. We realize there are significant differences in farm setup, locations, and other factors that could prohibit one from implementing these suggestions. Still, we are encouraging members to reevaluate their safety plans and augment them with additional precautions where possible.

In addition to the biosecurity recommendations that we are recommending at this time, the HPAI Task Force is working to find potential mitigations that will improve overall bird immunity. Things we are keeping in mind when discussing this plan are the possibilities and challenges associated with a vaccination strategy, as well as exploring overarching wild bird warning systems, and collaborating with APHIS on epidemiological reports that will determine weaknesses and interactions on farms. We will continue to work on these tasks over the coming weeks and months.

Focus On Biosecurity:

Key Owners

Highest Level of Management on Farm

- Develop a culture of biosecurity:
 - Appoint an empowered biosecurity compliance officer on each site.
 - Provide documented training and hold open discussions with staff.

Location/Shift Supervisors

- Establish shift meetings to ensure the implementation of the biosecurity parameters are being followed. Some farms may need several meetings happening simultaneously based on the various areas of the farm (processing, production, etc.).

General Management

- Keep drivers in their trucks, establish truck requirements for sanitation and track truck history that includes other sites they have visited within the past 7 days.
- Have separate people dedicated to managing staff who work inside and outside of the barns, respectively.
- Focus resources to closely monitor HPAI infection exposure at critical hubs during periods of substantial risk, such as moving pullets and layers, house maintenance, movement of equipment, mowing, or moving manure.
- Designate parking away from your hen houses and outside of the Primary Business of Activity (PBA).
- Create traffic flow patterns to control who enters the PBA and farm in general.
- Isolate manure from the rest of the farm. When a truck is picking up manure, they should not use the same driveway that

employees use. You may have to add a separate entrance for manure trucks.

- Line of Sight (LOS) and physical signage should always be visible.
- Audit entry procedures for crossing the LOS, under both normal circumstances and in cases of special crossings needed.

Compliance Officer

- Limit what can come onto the farm if it has been disinfected and/or UV sterilized, and where it can go if it enters the clean side of LOS.
 - Don't allow cell phones in the barn area. Educate on and implement the management of miscellaneous items that employees might bring that can increase transmission.
- Keep crews separate from barn staff. Utilize permitted-only entry into the LOS and establish a permanent process to verify requirements are done before, during and after tasks like moving birds, moving manure, maintenance, etc.
- Implement periodic self-audits on facility biosecurity. Additional Audits for Implementation of Biosecurity Plan:
 - Self-audit to ensure every precaution is followed according to the NPIP 14 Point Plan.
 - Consider having your biosecurity measures audited as a part of the annual animal welfare audit.

Gate Personnel

- OUTSIDE The PBA and LOS: Required outside vehicles must provide proof of cleaning/disinfecting before entering the PBA. Gate personnel needs to have the authority to turn anyone away that does not meet this requirement. This should always be practiced.

Grounds Team/Maintenance

- LOS should be clearly defined, and signage should be visible. Perform external LOS daily disinfection, and sanitize with eco-friendly sprays around entrances, air inlets, fans, and flat surfaces, particularly during periods of equipment, pullets and layer movement.

Sanitation Team

- Mats should be cleaned daily or when dirty at a minimum. Check that disinfectants are being mixed correctly at the right concentrations.
- Use of solutions and disinfectants:
 - The mats should be disinfected and washed off. Fresh solution should be added at least every 24 hours. The cleaning solution can be made and stored in a container and kept by the mat, but a new solution needs to be made at least every 72 hours (viability of mixed solution).
- Alcohol based solutions can work on killing some viruses but are not sufficient for cleaning shoes nor will it hold up in organic matter.
- Don't necessarily change from liquid foot bath solution because the floor is getting slippery, change how you address the slippery floor, add mats, or change the floor to have a grit epoxy for traction.

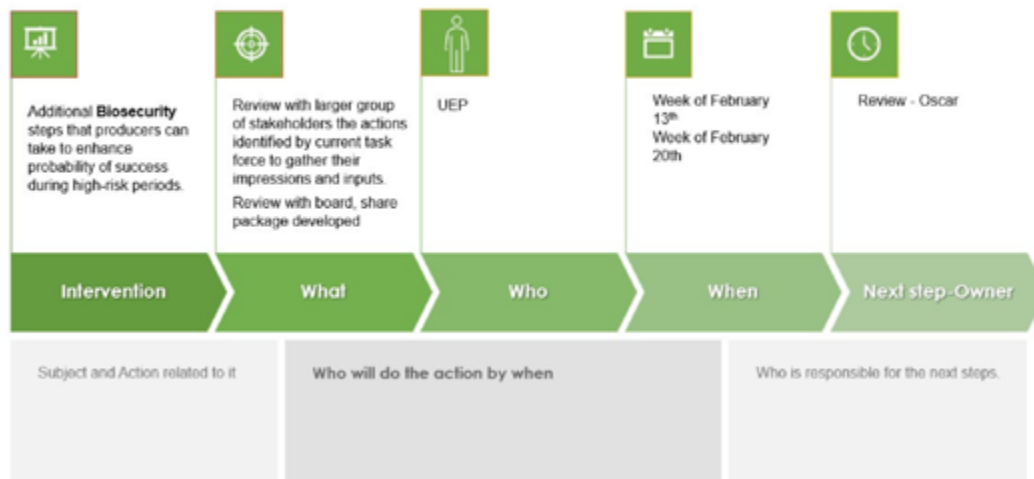
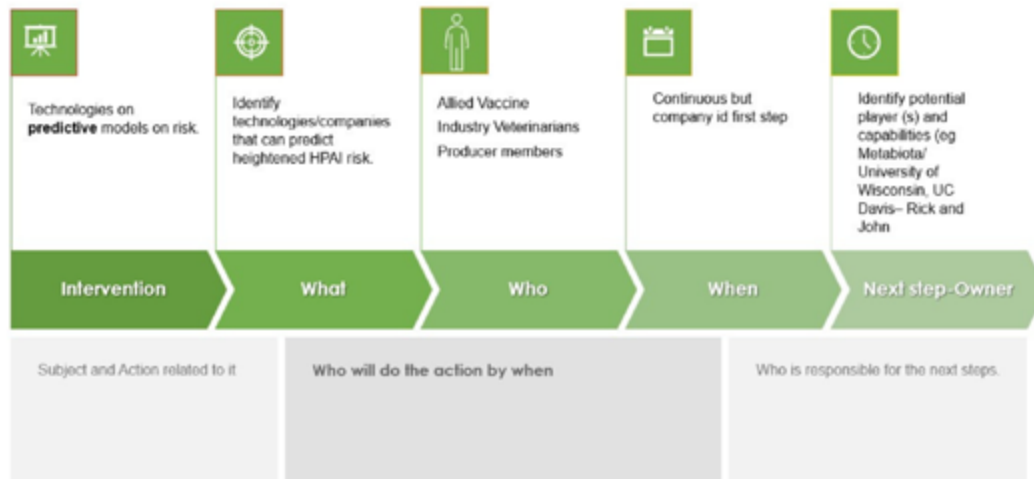
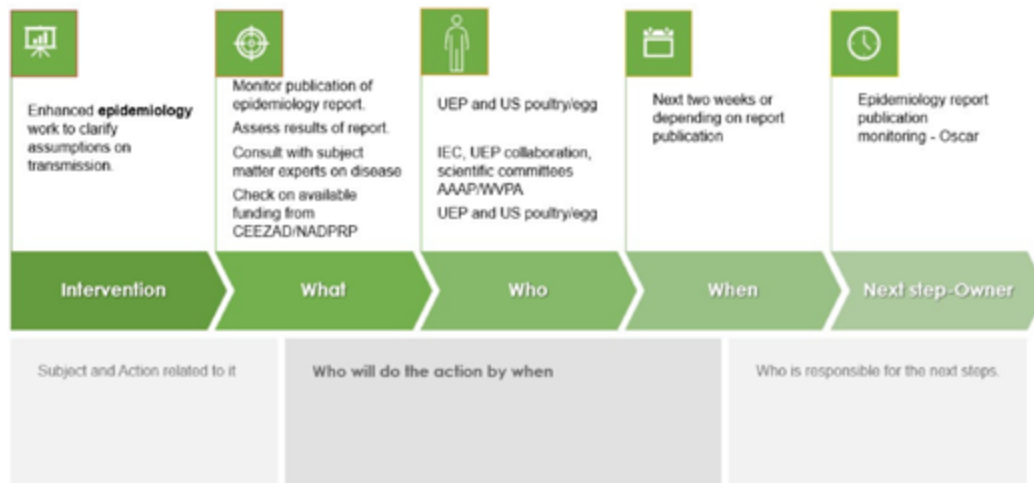
All Employees

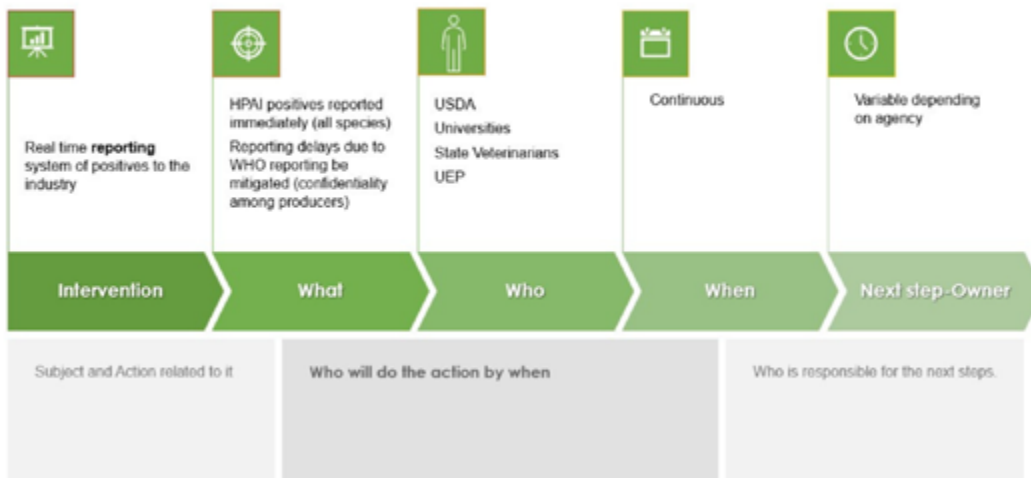
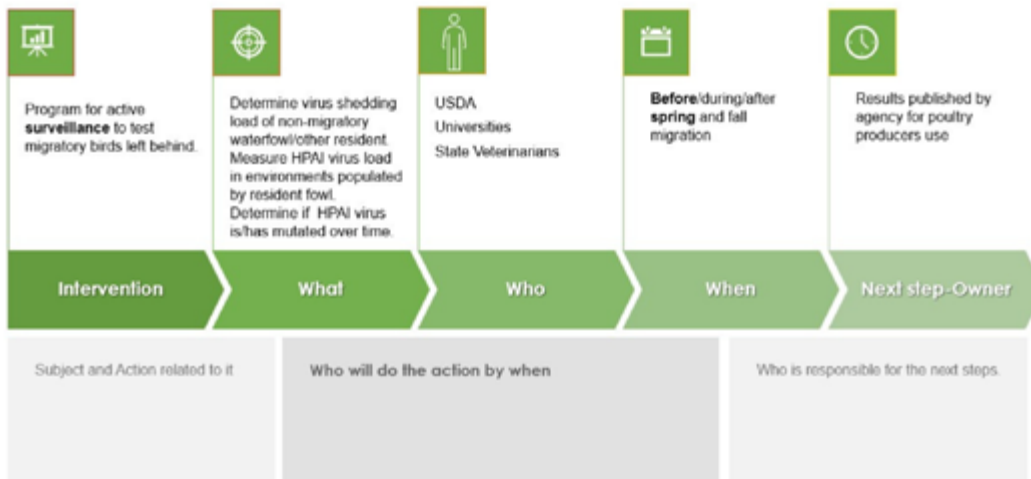
- Inspect for and manage birds same as rodents. Address rodents. Remove feed sources from under feed tanks and other stuff that can attract birds. Remove/manage nesting areas especially around barns, etc.
- Utilize some of these potential solutions to manage wild birds:
 - Lasers for keeping birds away from farms.
 - Obtain nuisance permits from

the Department of Environment Conservation for hunting waterfowl to keep them away from farms.

- If there is a pond on the farm, put stringers across the pond in a narrow grid to keep waterfowl from landing.
- Inspect for and remove bird nests being built during Spring, daily.
- Showers should be inspected, managed, supplied, and cleaned.
- Verify that employees are properly showering-in and showering-out.
- Wash hands at that start of and throughout the day to mitigate the spreading of viruses and bacteria.
- Shower-out is just as important as shower-in. It's imperative to wash off potential bacteria and viruses that you're carrying in your hair and on your skin.
- Showering/bulletproof Danish entry and staying in place once the line of separation is crossed.
- Make investments in having different clothing and shoes for different areas on the farm.
- If indoor staff members need to go outside, they must shower-out, then shower-in when reentering.
- Have designated, approved individuals with procedures to reduce cross-traffic from processing to production, and vice versa.

Month 1 Action Items

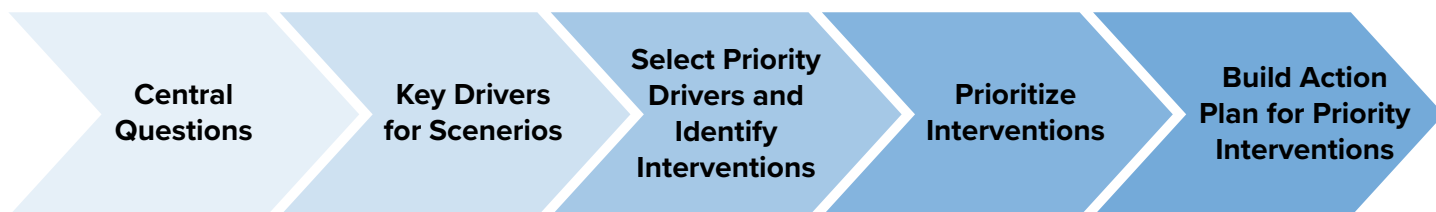




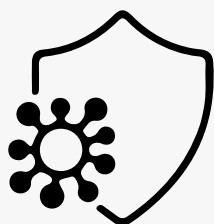
Biosecurity: Explaining the Process and 6 Areas of Focus

Dovetail, LLC

THE PROCESS



PREVENTING

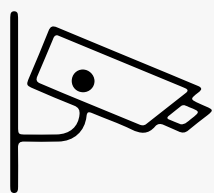


Immunity



Biosecurity

MONITORING

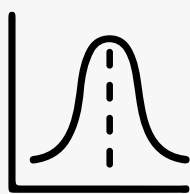


Surveillance



Reporting

UNDERSTANDING



Prediction



Epidemiology

PRIORITY INTERVENTIONS TO ENHANCE LIKELIHOOD OF SUCCESS

Epidemiology = Enhanced epidemiology work to clarify assumptions on transmission

Prediction = Technologies with predictive models on risk, using disease presence, breaks, geographic concentration, etc

Immunity = Reduce susceptibility to infection or improve immunity of commercial poultry

Biosecurity = Best practices and additional steps that producers can take to enhance probability of success keeping HPAI from entering the barns during high-risk periods

Surveillance = Program for active surveillance to test migratory birds left behind

Reporting = Real time reporting system of positives to the industry

US Poultry Industry Biosecurity Overview

BACKGROUND:

The information provided in this document was gathered directly from feedback and comments from industry poultry veterinarians, and USDA and state responders during the US HPAI 2022 outbreak. This feedback includes individual perspectives from those involved with “boots on the ground” responses at infected commercial premises in states across the US. All major commercial poultry production types are represented in this feedback, including commercial broilers, breeders, layers, turkeys, and ducks.

HOW TO IMPLEMENT PROTECTIVE BIOSECURITY MEASURES AND MINIMIZE BIOSECURITY RISK FACTORS

1. Biosecurity Compliance

The robustness of a biosecurity plan is irrelevant if it is not being implemented consistently on each premises, by all employees, caretakers and contractors

How to assess and improve:

- Conduct compliance audits at company farms/facilities, include contractors and their facilities at the Perimeter Buffer Area (PBA) and the Line of separation (LOS) entrance/exit
- Hire or train staff to be compliance auditors
- Use cameras/go pros to evaluate compliance with PBA and LOS entry/exit procedures
- Use security checkpoints at farm PBA entrance

2. Biosecurity Training

Consistent, frequent and quality training should be conducted and regularly evaluated for ALL employees, caretakers, and contractors who regularly cross the PBA and LOS.

How to assess and improve:

- Audit employees, caretakers and contractors on their PBA and LOS procedures.
- Conduct trainings with employees and caretakers at least annually and at hire before they are permitted entry to farms to Ensure adequate coverage of National Poultry Improvement Plan (NPIP) 14 Biosecurity Principles
 - o Include the importance of biosecurity and the impacts of biosecurity failures (including introduction of disease, flock depopulations, loss of business and work, extended downtimes, impact to consumer prices, etc.)
 - o Use demonstrations (ex. Glo Germ™) where possible (donning and doffing of personal protection equipment, PBA/LOS entry, etc.)
- Ensure training materials are available in all language spoken by employees and caretakers (See USDA Defend the Flock resources)
- Keep site and company-specific biosecurity materials available on farms/ facilities (biosecurity training, premises maps, biosecurity procedures, etc.)
- Ensure employees and caretakers are adequately trained on how to collect AI samples from birds and to report any signs of illness immediately.

3. Biosecurity Interventions

Ensure there are adequate measures in place to prevent disease from being carried:

- o Onto poultry farms (across the PBA)
- o Into poultry houses (across the LOS)
- o Between poultry facilities

How to assess and improve:

- Evaluate how staff and vehicles move between farms and identify where interventions could be implemented
- Ensure robust interventions are implemented at entry to LOS; this is the main way the virus will be carried into the houses.
- Implement Danish entry system at LOS with barn-specific footwear and clothing, limiting the number of entrances to LOS, and ensuring a biosecure entrance to the farm, and the entrance area has a separate clean and dirty area (e.g., line of separation)
- Add physical barriers (locked gate, etc.) at farm PBA entrance; limit number of entrances to farm PBA (block off additional driveways/roads, etc.)
- Limit vehicular traffic crossing the PBA (re-fill feed bins outside PBA, visitor/contractor parking lots outside PBA)
- Separate staff and equipment/vehicles for different farms/facilities
- Implement interventions between farms for vehicles and staff
 - Truck wash/spray down tires when entering and exiting each PBA
 - Single direction flow of vehicles and staff between facilities
 - Change clothes/shoes, shower in between facilities

4. Building Integrity and Pest/Wild Bird Control Programs

Damaged or inadequate housing structures and insufficient pest control programs permit access to wild birds, rodents and wildlife, which can carry disease into the barns and increase contamination around or inside the barns.

How to assess and improve:

- Ensure wild bird and pest control programs are simple, consistent and are audited regularly. Keep records to identify potential issues faster.

- Conduct barn structural assessments periodically, especially after heavy equipment usage.
- Identify cost-effective and economical ways to address deficiencies (wire mesh over holes, etc.)
- Repair or decommission poultry houses that lack structural integrity.

5. Minimize Epidemiological Links Between Farms/ Facilities

Staff and equipment that move between different farms, facilities and integrators may have undetermined or unmitigated epidemiological links, allowing spread of HPAI between farms.

How to assess and improve:

- Conduct epidemiological questionnaire with all company employees, caretakers and contractors to determine potential links between them.
- Assign staff to farms/facilities in a manner that reduces cross-contamination between facilities, based on answers to these questionnaires.
- Do not share contractors/ vehicles/catch-crews between integrators.
- Define specific traffic patterns on-farm and between farms/facilities to minimize cross-contamination.
- Prevent or minimize repeated movements of vehicles and staff between farms.
- Identify and prevent or mitigate vehicle and staff congregation points between farms/ facilities and integrators (gas stations, restaurants, community centers, etc.)
- Prevent co-locating different aspects of production when building new barns and facilities.
- Limit, delay and phase out multi-age facilities.

Practical Biosecurity Check List

International Egg Commission

PURPOSE OF THE IEC BIOSECURITY CHECK LIST

This IEC Biosecurity Check List is designed to help egg businesses develop and improve their overall level of biosecurity. Excellent biosecurity is proven to be the most critical tool in helping prevent a wide range of avian disease problems and can even help egg businesses avoid infection during severe avian influenza outbreaks.

To access and download the full check list, [click here](#).



Poultry Biosecurity

The Center of Food Security and Public Health, Iowa State University College of Veterinary Medicine

Implementing biosecurity on a poultry operation can prevent the introduction and spread of infectious diseases, including Avian Influenza. The biosecurity resources below are based off the Checklist for Self-Assessment of Implementing Poultry Biosecurity, which reflect the items included in the Standard E Biosecurity Principles within the National Poultry Improvement Plan, or NPIP, Official Program Standards.

Access this full resource [here](#).



Scenario Planning

Dovetail, LLC

WHAT IS SCENARIO PLANNING?

Scenario planning is the process to portray critical alternate futures or pathways that if they become reality will impact positively or negatively your defined strategy.

Scenario planning looks fundamentally at EXTERNAL industry and beyond industry factors or forces that may impact current reality as we know it.

Scenarios are not forecasts, but instead they are hypotheses or stories that describe the potential future, allowing you to anticipate and adapt

All the factors are external and internal aspects are only considered for product launches and some internal impact analysis

KEY BENEFITS OF SCENARIO PLANNING

Identifies new opportunities and blind spots on our current strategy

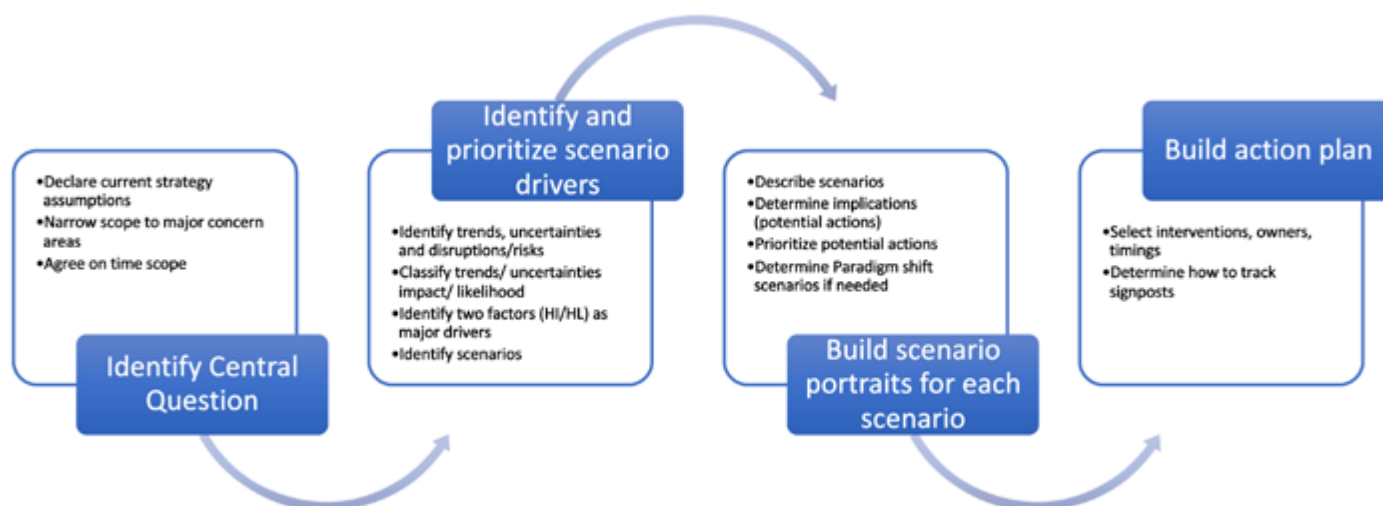
Provides early warning signs that improve speed and quality of decision making

Improves organizational agility by helping respond proactively to change

Builds resilience as it prepares for uncertain times

Reduces risk and potential losses by unexpected events

SCENARIO PLANNING PROCESS



CENTRAL QUESTIONS:

KEY SCENARIO AREAS FOR DEVELOPMENT

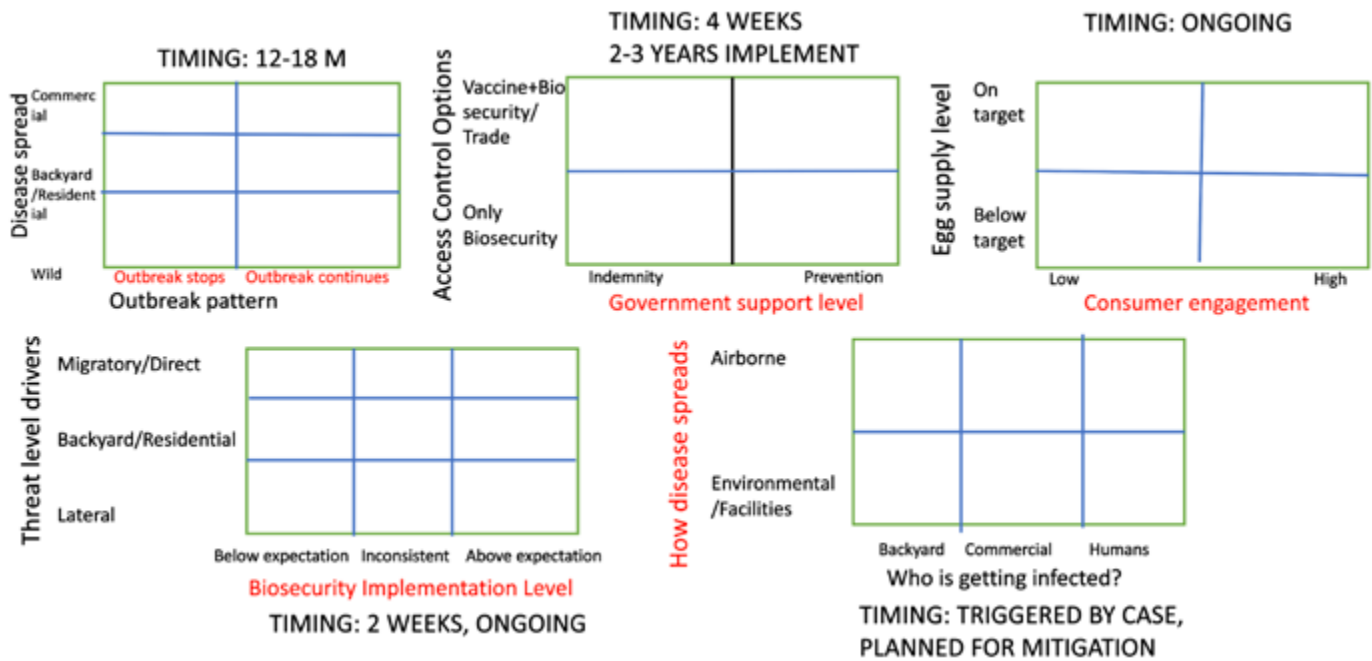
Current Outbreak ends or Outbreak continues	Preserving government support
<ul style="list-style-type: none"> Can HPAI be stamped out of the US using the current methodology used by OIE? What does the commercial poultry look like if HPAI is endemic in the US going forward? How does the layer industry petition USDA to allow layers to vaccinate for HPAI? What will be the implications/effects on exports for various species (meat vs eggs)? What happens if disease continues to spread and for example Brazil has a major outbreak of H5N, HPAI and they vaccinate? Will vaccines be available in the right quantity, if needed? 	<ul style="list-style-type: none"> Are the options beyond depopulation to control HPAI (viability, role of surveillance, etc)? Will government limit indemnity payments and compensation if the virus continues? How can we take action now to preserve government indemnity? Can we keep government support in relation to surveillance? Can we enhance/augment stamping out? What happens if a facility gets hit more than once? Keeping wildlife services and other government surveillance areas. Uniform state response to deal with id, depopulation and euthanasia.
<p>Key players: <i>USDA, APHIS, Trade associations, OIE, US APEEC, vaccine suppliers</i></p> <p>Timing: 12 -18 months</p>	<p>Key players: <i>USDA, State veterinarian, other industry poultry, Wildlife services</i></p> <p>Timing: 4 weeks</p> <p>2-3 years implement</p>

CENTRAL QUESTIONS: KEY SCENARIO AREAS FOR DEVELOPMENT

Consumer outreach	Disease prevention through biosecurity
<ul style="list-style-type: none"> • How do we communicate what we are doing to re-assure public that we are responding correctly and challenges AI poses to our industry? • How do we limit impact of catastrophic flock losses from affecting egg layer industry? • How do we make sure we have/preserve enough birds to supply eggs? • How to convey to consumer that vaccination of birds is not harmful to them? 	<ul style="list-style-type: none"> • Will biosecurity implementation audits be mandated if the outbreak continues? • What biosecurity improvements must be made to prevent additional HPAI outbreaks in commercial layers in the US? • What are key actions each farm should take to stop or slow spread of AI? • What are internal biosecurity measures that can be enhanced/implemented? • There is no evidence now on movement from backyard to commercial.
<p>Key players:</p> <p><i>American Egg Board, USDA, Key opinion leaders on research, Team Egg, AVMA</i></p> <p>Timing: ONGOING</p>	<p>Key players:</p> <p><i>Producers, Allied, Researchers, USDA epidemiology</i></p> <p>Timing: 2 weeks, ONGOING</p>



SCENARIOS: THE 5 QUADRANTS OF DRIVERS



DISEASE PREVENTION THROUGH BIOSECURITY

Source	Risk factors: proximity, timing/season, staff availability		
Migratory/Direct	Ineffective/inadequate plan or implementation	Inconsistent implementation of advanced measures	Advanced measures in place and implemented consistently
Backyard/Residential	Inhouse Ineffective Implementation	Inhouse Inconsistent Implementation	In house Consistent Implementation with enhancements
Lateral	Inhouse Ineffective Implementation Poor surveillance	Inhouse Inconsistent Implementation	In house Consistent Implementation with enhancements Strong surveillance
	Below expectation	Biosecurity Implementation	Above expectation

MIGRATORY/DIRECT

Signposts	What is working?	What interventions are needed?
OIE world maps reported by each country US Wildlife services Hunter Harvest surveillance	15% lateral to commercial vs 85% in 2015	A) Enhance biosecurity principles and protocols to prepare and protect during migration fly away periods.
Wild bird die off (mortality)	Getting more samples than ever through all fly aways	
	Communication of interactions that can bring issues from migratory/direct to production.	
	Education to employees is trackable.	DD) Technologies with predictive models on risk using disease presence, breaks, geographic concentration, etc.
	Detections and reporting of spread to mamallion species	EE) Enhanced epidemiology work to clarify assumptions on transmission
		H) Reduce susceptibility to infection or improve immunity of commercial poultry.
		I) Human-Wildlife interface locations, what can be done?

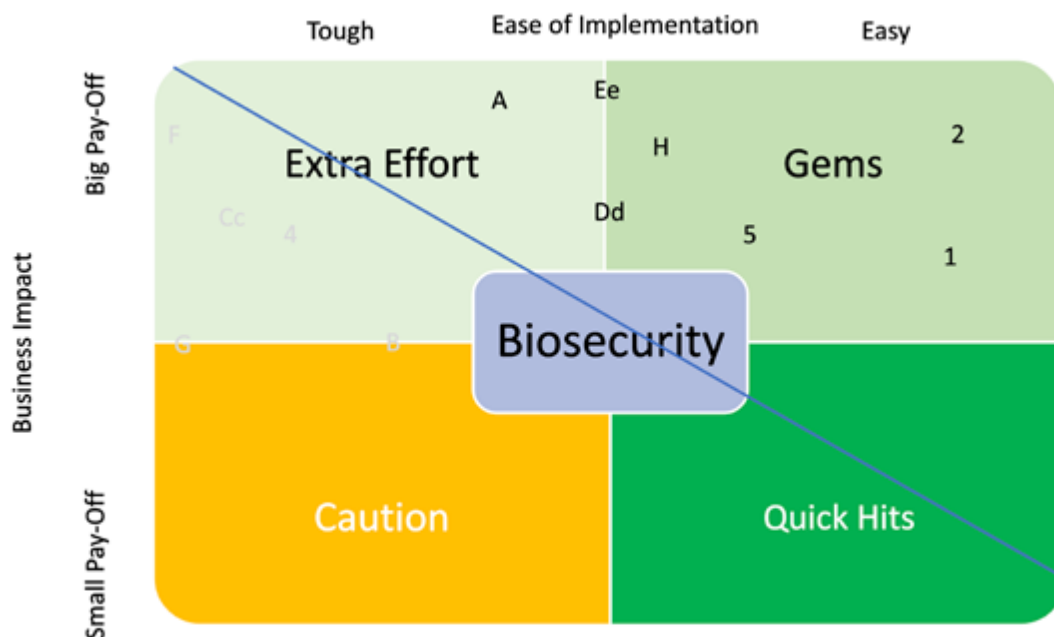


BACKYARD/RESIDENTIAL

Signposts	What is working?	What interventions are needed?
APHIS posts USDA notification page	15% lateral to commercial vs 85% in 2015	1) Program for active surveillance to test migratory birds left behind.
Surveillance in backyard flocks		
Stakeholders from different states	Backyard producers are communicating to states to notify and ask for help.	2) Real time reporting system of positives to the industry.
	Communication of interactions that can bring issues from backyard to production.	
	Education to employees is trackable.	DD) Technologies with predictive models on risk using disease presence, breaks, geographic concentration, etc.
	No current evidence of spread from backyard to commercial	
		5) Implement periodic self audits on these facilities

EXERCISE 7A

Classify the potential actions for each scenario to select your final interventions to pursue or plan for in action plan



SELECTING INTERVENTIONS FOR BIOSECURITY

Intervention	What	Who	When	Measurement
Enhance biosecurity principles and protocols to prepare and protect during migration fly away periods. Should practice all times.	OUTSIDE The PBA and LOS: Mandatory outside vehicle wash receipt and verification prior to entry into PBA. Gate personnel has the authority to turn anyone away that does not meet this requirement.	Gate entry personnel	Daily	Documented daily and submitted to compliance officer
ADDITIONAL STEPS THAT PRODUCERS CAN TAKE TO ENHANCE PROBABILITY OF SUCCESS DURING HIGH-RISK PERIODS. LOS should be clearly defined and physical. Should include signage,	External LOS daily disinfection, ecofriendly disinfecting spray around entrances, air inlets, fans, and flat surfaces; particularly during periods of equipment movement, as well as pullets and layer movements.	Separate from internal LOS personnel/ Grounds team/ maintenance	Daily during high threat	Documented daily and submitted to compliance officer
Way to enforce	Dedicated inside and outside people	General management	Daily	No cross traffic outside of LOS
	Designated parking away from henhouses, outside the PBA -Traffic flow patterns to control who enters PBA and farm in general			



Intervention	What	Who	When	Measurement
Keep driver in truck. Establish truck requirements for sanitation and truck history at other sites within past 7 days. Have separate people manage and if not, complete clothing change, etc.	Segregation of manure from rest of farm, when a truck is picking up manure (company or outside owned) they should not use the same driveway that the employees use (you may have to add a separate entrance)			
Documented training, signing, and topics. Open discussion which involves staff.	Developing A Culture of Biosecurity: Appoint an empowered biosecurity compliance officer on each site	Highest level of management on farm	Daily coverage	Document completion
	Established shift meetings to ensure the implementation of the biosecurity parameters; may have several ones simultaneously by areas (processing, production, etc)	Location/shift supervisors	Daily	Shift meetings take place daily as expected
	Ensure biosecurity officer has a voice at higher levels and higher management person bringing across that voice of the biosecurity officer.	Biosecurity officer and management person in charge of that aspect	Daily	Locked biosecurity section/time included in key sessions with board/management
	Entry into the LOS and Inside:			
LOS should be visible and physical. Signage Authorized person to train and physically show how to use.	Auditable Entry Procedures for Crossing the LOS under both normal circumstances and in cases of special crossings needed.			
	Showering/bulletproof Danish entry and staying in place once the line of separation is crossed	Each employee	Ongoing	Monitored by the compliance officer (appoint several people to monitor)

Intervention	What	Who	When	Measurement
Make investment in clothing and different shoes for different areas. Do not allow barn people to step outside. If go outside must shower out then back in. (Enclosed smoke rooms)	Purchase of specific shoes and clothing for specific house so no need to move from house to house	Each employee	Ongoing in farm	Documented daily and submitted to compliance officer
Keep crews separate from barn staff.	Permitted entry into LOS, establishing a permanent process to verify requirements are done before, during and after. (Moving Birds, Manure, Vaccination Crews, Maintenance, etc)	Compliance person	Daily	Documented daily and submitted to compliance officer
BIOSECURITY: IF IT'S NOT INCONVIENT THEN YOU PROBABLY ARENT DOING IT. Limit what can come in farm, if it is disinfected/UV and where it can go if enters clean side of LOS. I.e., don't allow cell phones in barn area.	Education and implementation on managing the miscellaneous items that employees bring that can increase transmission. Share of best practices.	Compliance officer responsible to appoint monitoring individuals	Weekly meeting/ Daily instances	Maintained by documentation and submission to compliance officer
	Focus resources to monitor risk closer on critical hubs during periods of high risk... e.g. moving pullets and layers, house maintenance, movement of equipment, mowing, moving manure	General management in conjunction with biosecurity officer	Daily	Determine critical hubs, tradeoffs of resources or farm activities depending on threat level status

Intervention	What	Who	When	Measurement
Have designated, approved individual with procedures.	Reduce cross-traffic from processing to production and vice versa.	All employees	Daily	No cross-traffic between processing and production identified.
<p>Mats should be cleaned minimally daily or when dirty. Recognize need for contact time of specific disinfectant used. Check being mixed correctly at right concentration.</p> <p>Address disinfectants have limited to no effect in presence of organic matter</p>	<p>Use of solutions and disinfectants:</p> <ul style="list-style-type: none"> - Disinfectant in mat needs to be kept clean. The mats should be washed out and fresh solution added at least every 24 hours. Solution can be made and stored in a container and kept by the mat but new solution needs to be made at least every 72 hours (viability of mixed solution). - Alcohol based solutions can work on killing some viruses but are not sufficient for cleaning shoes nor will it hold up in organic matter - Don't necessarily change from liquid foot bath solution because the floor is getting slippery, change how you address the slippery floor, add mats or change the floor to have a grit epoxy for traction. 	Sanitation Team	Continuous	Review of Records by Biosecurity Officer or designee and physical observations.
<p>Be sure showers are inspected, managed, supplied, clean. Oversight of people showering through. Are they? Hair wet? Time in shower?</p>	<p>People precautions:</p> <ul style="list-style-type: none"> - Handwashing at start of day and throughout the day, sometimes we forget that basic handwashing keeps us from moving virus and bacteria - Shower out is just as important as shower in – if you don't wash off what you're carrying in your hair, on skin your car becomes an extension of the barn and you move viruses and bacteria, wherever you go 	All Employees	Continuous	Buddy Self Check System

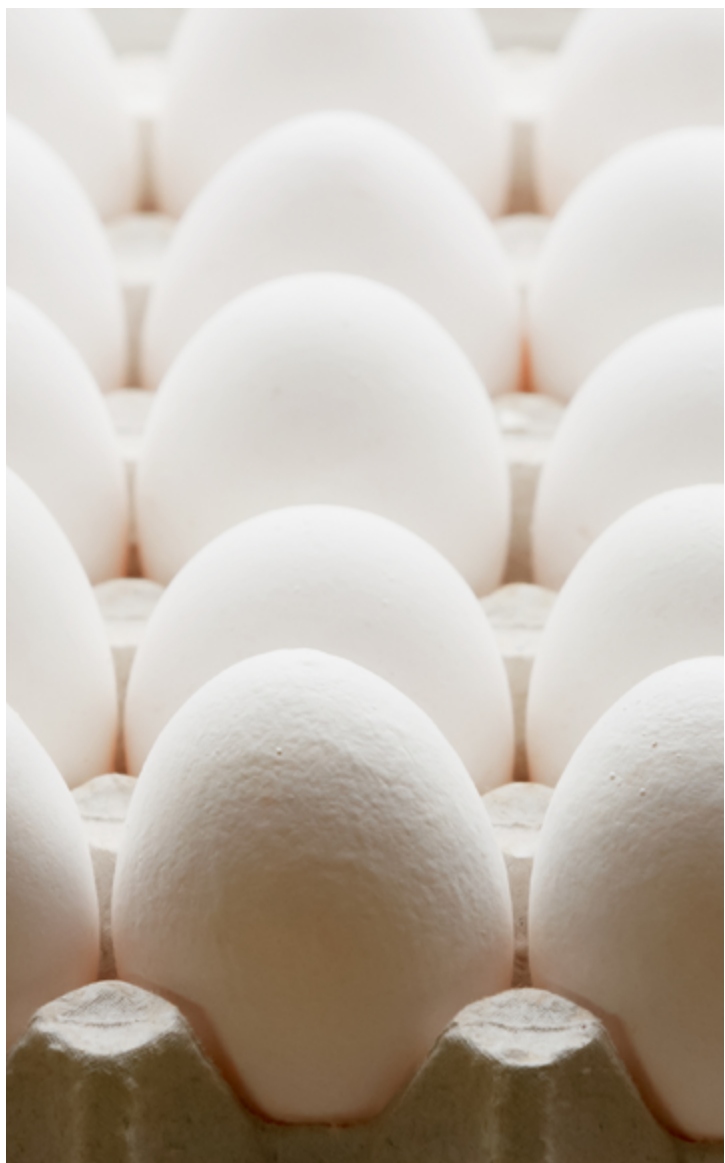
Intervention	What	Who	When	Measurement
Inspect for and manage birds same as rodents. Address rodents. Remove feed sources from under feed tanks and other stuff that can attract birds. Remove/ manage nesting areas especially around barns, etc.	Managing wild birds: <ul style="list-style-type: none"> - Lasers for keeping birds away from farms - Nuisance permits from DEC for hunting waterfowl and keeping waterfowl away from farms (it can be a deterrent to shot a bird and leave it so the others see it and don't want to land, that works until a wild animal eats it) - If you have a pond on a farm (possibly for fire mitigation), put stringers across the pond in a narrow grid to keep waterfowl from landing. - Frequent outside inspection and removal in spring for bird nests being built (daily), they can be very determined to build a nest in certain spots 			
	Contact APHIS Wildlife Services for Support in developing waterfowl and wild bird control program for your farm			
Implement periodic self-audits on facility biosecurity	Additional Audits for Implementation of plan: Self-audit to ensure every precaution is followed according to the NPIP 14 Point Plan	Compliance officer	Monthly but weekly during migration season	Fully implemented biosecurity plan
	Consider having biosecurity audited as a part of the annual animal welfare audit.	Compliance officer	Annual	Fully implemented biosecurity plan

SELECTING INTERVENTIONS IMMUNITY

Intervention	What	Who	When	Measurement
Reduce susceptibility to infection or improve immunity of commercial poultry	Identify broad spectrum anti-microbials that can augment bird health	Allied Vaccine Industry Veterinarians Producer members	During elevated threat periods	Reduced environmental load of non-specific microbes
	Vaccine program designed to increase circulating immune response through out life cycle of layers (continuous challenge model)	Allied Vaccine Industry Veterinarians Producer members	Continuous	Adequately elevated titer levels
	Investigate stressors that can reduce birds ability to fight challenges	Allied Vaccine Industry Veterinarians Producer members	Continuous	Less stress = healthier layers
	Frame a scenario where vaccine may be possible, if that becomes a reality: objective, logistics, regulatory, programming, surveillance	Allied and production industry/ State/Federal collaboration with a neutral scientific expert	Next 6 months	Government triggered next action
	Best practices for management or feeding to reduce environmental stressors	Potentially welfare auditing organizations, breeder companies management guides, university extension services material, allied industry (nutrients, etc) – RickPhillips (feed) and Katie Schlist (management)	Two weeks	Send to UEP
	Update on breeder sector on approaches or steps to improve immunity	Travis	Two weeks	Contact and summary of results

SELECTING INTERVENTIONS - PREDICTION

Intervention	What	Who	When	Measurement
Technologies on predictive models on risk	Identify technologies that can predict heightened HPAI risk	Allied Vaccine Industry Veterinarians Producer members	Continuous	A ready resource determines imminent threats of HPAI
	Make technologies available to each stakeholder	Allied Vaccine Industry Veterinarians Producer members	Continuous	Available to all stakeholders
	Seek funding for sustainable program availability	UEP and US Poultry and Egg	Continuous	Long-term funding is in place



SELECTING INTERVENTIONS - EPIDEMIOLOGY

Intervention	What	Who	When	Measurement
Enhanced epidemiology work to clarify assumptions on transmission	Scientific work to understand how direct introductions are happening.	USDA University of Minnesota	Next 6 months	Reliable information to be used to improve biosecurity measures
	Epidemiology report will be published and action to assess content of the report.	UEP and US poultry and egg	Two weeks	Resources assigned for evaluation of report content upon release of report
	Dedicated resources to complete the epidemiology work	UEP and US poultry and egg	Two weeks	Do we get the resources assigned and timing designated
	Check on available funding from CEEZAD/NADPRP	UEP and US poultry and egg	Two weeks	Can they go ask for it, does it fit?
	Use of predictive modeling and/or artificial intelligence	Metabiota for example, University of Minnesota, UC Davis. Rick and John next steps.	Two weeks	Identification of potential resource and capabilities
	Cross pollinate virus information from other geographies to look at epidemiology studies and biosecurity	IEC UEP collaboration Scientific committees AAAP, WVPA	Ongoing	Formal response on the findings of the cross pollination Reliable information to be used to improve biosecurity measures

SELECTING INTERVENTIONS - SURVEILLANCE

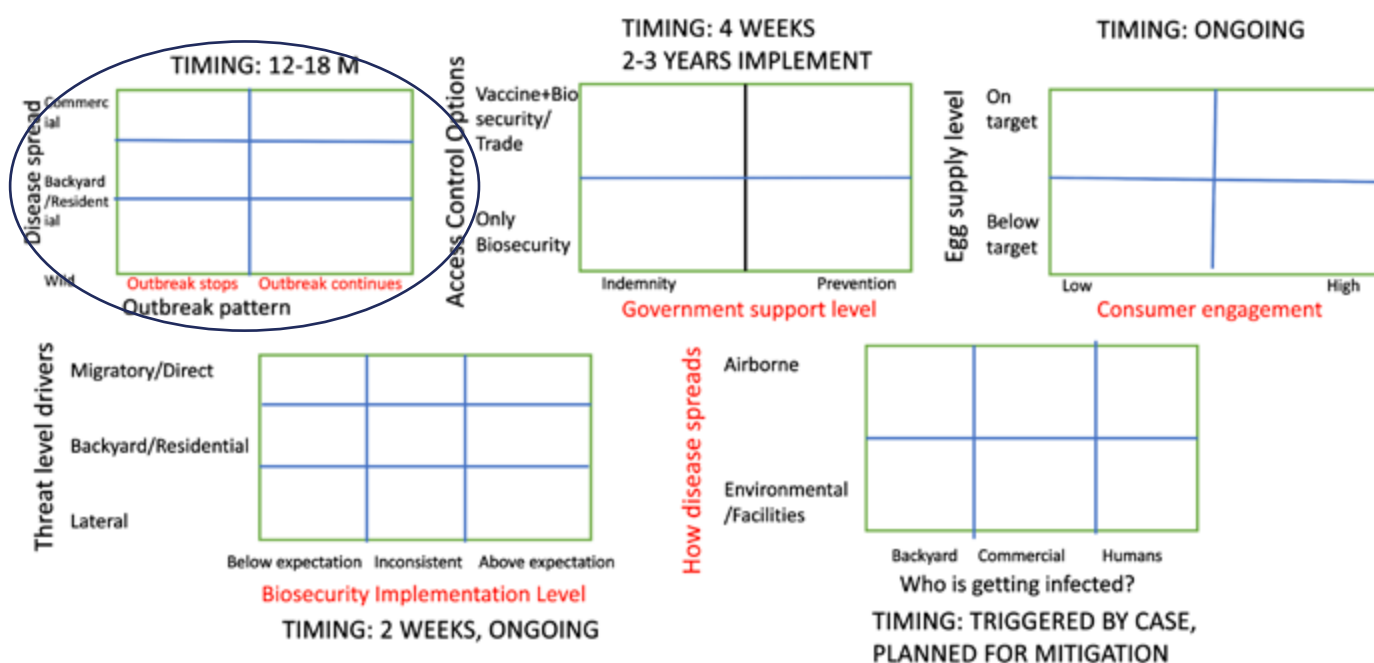
Intervention	What	Who	When	Measurement
Program for active surveillance to test migratory birds left behind.	Determine virus shedding load of non-migratory waterfowl and other resident birds	USDA Universities State Veterinarians	Before/during/after Spring and fall migration	Results published for poultry producers use
	Measure HPAI virus load in environments populated by resident fowl	USDA Universities State Veterinarians	Before/during/after Spring and fall migration	Results published for poultry producers use
	Determine if the HPAI virus is/has mutated over time	USDA Universities State Veterinarians	Before/during/after Spring and fall migration	Results published for poultry producers use



SELECTING INTERVENTIONS - REPORTING

Intervention	What	Who	When	Measurement
Real time reporting system of positives to the industry	HPAI positives reported immediately (all species)	USDA Universities State Veterinarians UEP	Continuous	Immediate reporting received by stakeholders
	Reporting delays due to WHO reporting be mitigated (confidentiality among producers)	USDA Universities State Veterinarians UEP	Continuous	Immediate reporting received by stakeholders

SCENARIOS: THE 5 QUADRANTS OF DRIVERS





BASIC SCENARIOS

	Outbreak ends	OUTBREAK continues
Description	Current measures have positive effect and by November we do not see confirmed detections.	Still having confirmed cases in commercial layers up to November
Signposts	No detections in 120 days leading up to September in commercial layers No detections in 120 days in commercial turkeys/broilers	Continued detections in 120 days leading up to September in commercial layers Continued detections in 120 days in commercial turkeys/broilers
What we do?	Biosecurity goes back to normal levels.	Enhanced biosecurity measures are executed.

