

Instructions for Webinar Participation

Getting Started

- The webinar will start soon
- Audio is through your computer speakers or headset – ***you may not hear sound until webinar begins***
- Audio check - use the Audio Settings **Audio Settings** options to do a sound check
- If you see presenters talking but do not hear audio, use the Question & Answer feature to indicate you are not getting sound

How to Ask Questions

1. Click on **Questions and Answers** icon found at the upper part of your screen
2. A box will open where you can type in questions, comments, indicate sound problems, etc.
3. You can use this throughout this webinar to ask questions

Technical Help

- Do your own sound check using the **Audio Settings** option.
- Telephone (800) 500-1554 for technical support.

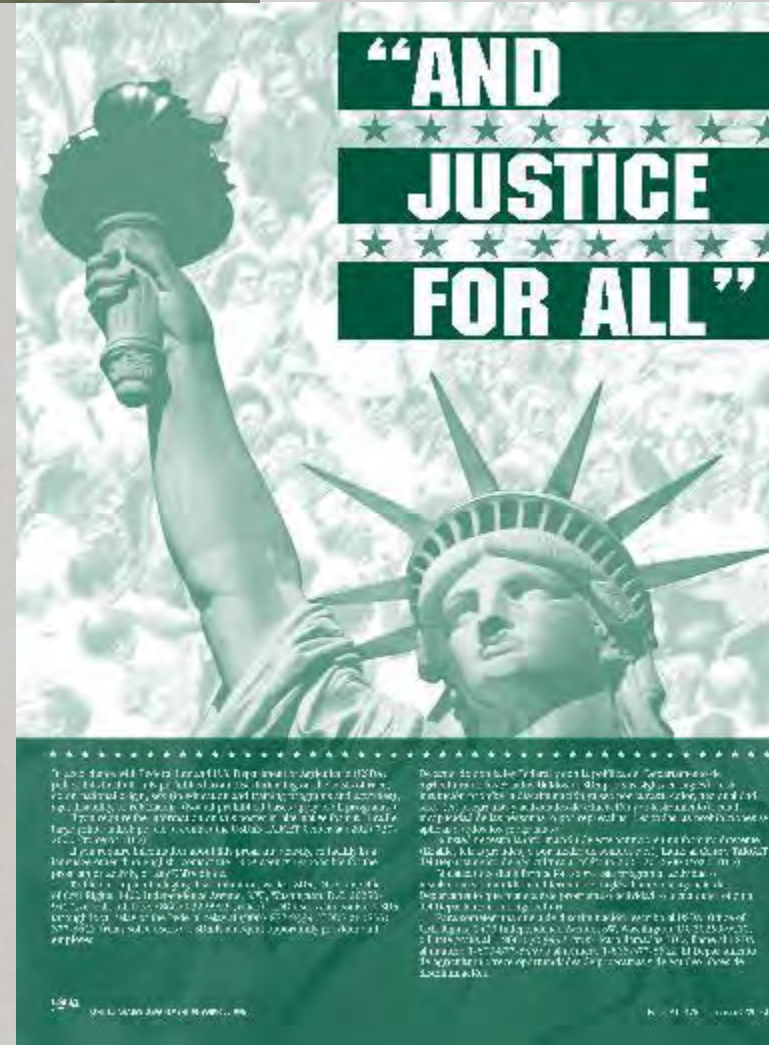
MSU EXTENSION 2016 BEGINNING FARMER WEBINAR SERIES



TWENTY THREE EVENING WEBINARS FOR PEOPLE WANTING TO 'GET STARTED' FARMING

March 9, 2016 7:00pm eastern
Getting started with biosecurity:
protecting farm animals.

MSU is an affirmative-action, equal-opportunity employer. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, sex, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status.



Getting started with biosecurity:
Protecting Farm Animals

Don't Bring It Home - Program

Madonna Benjamin, DVM, MS

**Assistant Professor, Extension Swine Veterinarian
Department of Large Animal Clinical Sciences
College of Veterinary Medicine**

Don't Bring it Home - Outline

1. Biosecurity – Overall
2. Assessing Visitor Risk and Controlling Access
3. Manure and Its Concern
4. Biosecurity - Swine
5. Biosecurity - Cattle
6. Biosecurity - Poultry
7. Biosecurity - Horses
8. Summary
9. Resources

PED – Don't bring it home

Porcine Epidemic Diarrhea Virus is a threat to herd health

PED is a virus that can be easily spread to your swine herd. Proper precautions and biosecurity methods should be in place to help protect your animals from this detrimental virus. If you suspect that your herd has been exposed to this virus, please call your veterinarian immediately.

	After visiting an area with comingled pigs, change your footwear (boots or boot covers) before getting in your truck.	 Do not enter Restricted Access Permission to enter For access call _____	Have signage on your farm to limit visits from unknown guests. Post a contact number.
	Washing hands before and after contact with animals will decrease the spread of disease.		Have designated clothing for each pig barn.
	Clean trailers, boots and equipment and use effective disinfectants such as Clorox in a 1:32 ratio.		Have a separate isolation area for all incoming animals on your farm. House them separately for at least 28 days.
	Use an off-site vehicle wash, being sure to clean tires and truck mats, after visiting an area with pigs from other farms.		Use an off-site vehicle wash, being sure to clean tires and truck mats, after visiting an area with pigs from other farms.

For more information on this or other herd health concerns please contact a Michigan State University Extension county office or call 888-MSUE4MI (888-678-3464) to locate an expert in your area.

Biosecurity – Overall

Protect your land, animals and livelihood

Disease control and prevention

Animal movement

People movement

Pest and wildlife management

Mortality management

Manure Management

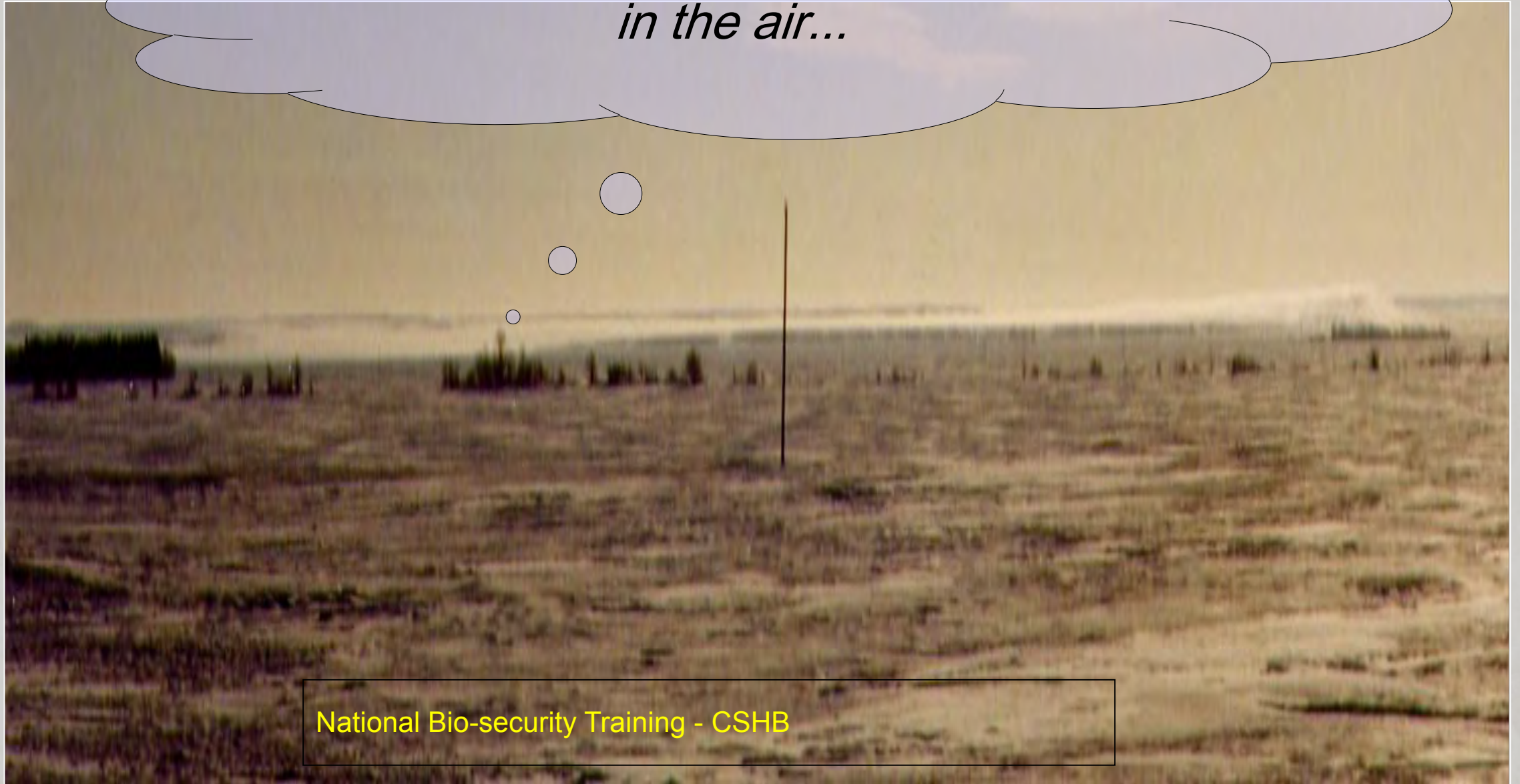
Why the BIG concern?

- Foreign and emerging disease issues
- The globalization of agriculture
- Public awareness of food safety and purchasing power
- Individual farms are less isolated
- High human and animal population
- Self sustaining – ie backyard chickens
- Air and water quality concerns are more prominent
- Foreign workers, increased global travel and ability to control a foreign animal disease outbreak are compromised

Disease control and prevention - Implications

- Harmful bacteria, virus, and pathogens
 - Diseases can cause acute infection and production losses
 - Or result in an endemic situation such as Johne's or PRRSv
- Diseases can result in economic losses due to trade barriers
- Hazards and risks vary by species and farming operations.
 - An SOP for each farm should be established to identify.
 - possible risks
 - critical control points
 - limits or standards for your farm
 - monitoring schedule
 - effective records

*Solid or liquid particles in suspension
in the air...*



National Bio-security Training - CSHB

Dr. Brad Chappell, Manitoba, 2006.



north

Barn 3

Barn 2

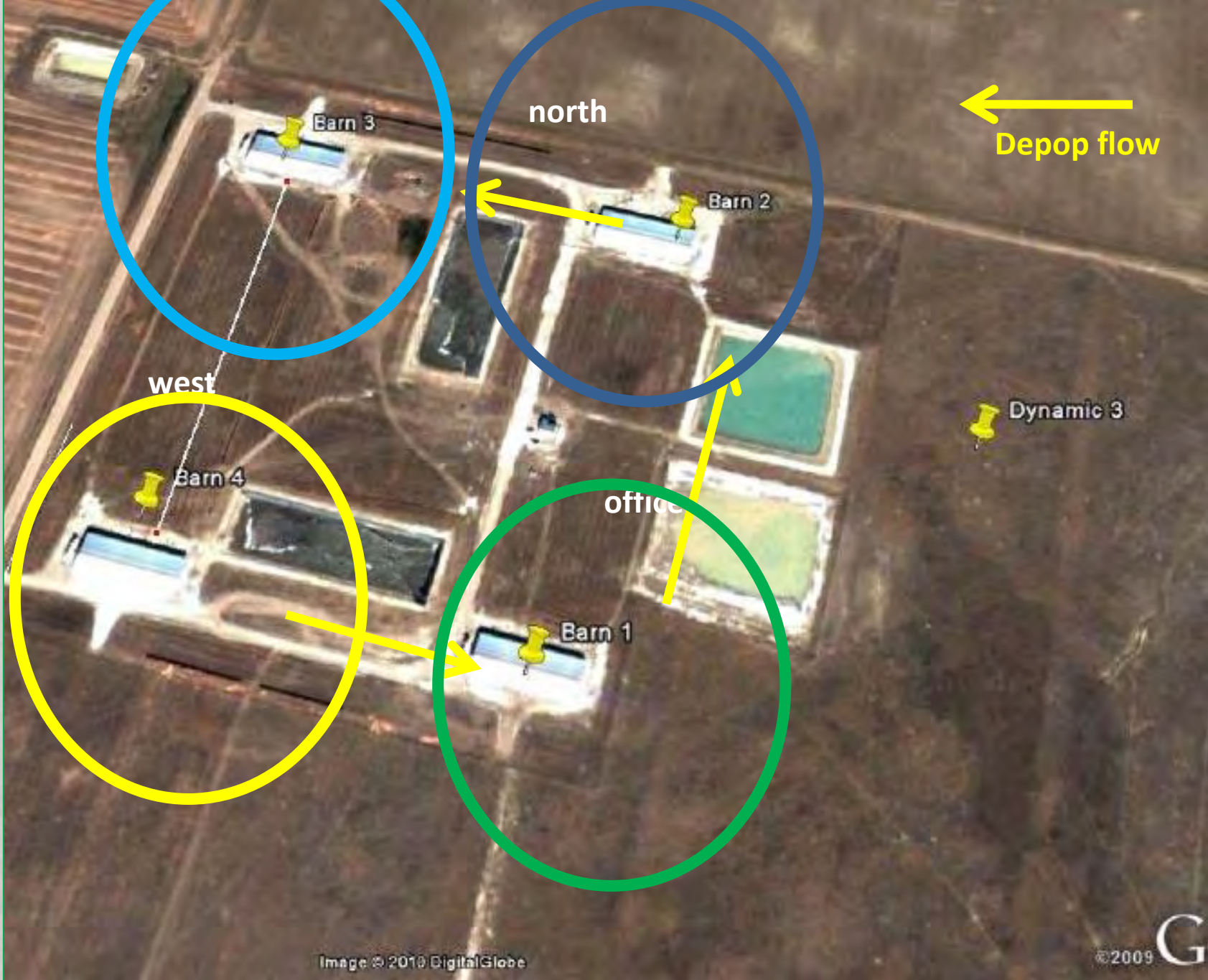
west

Dynamic 3

office

Barn 4

Barn 1



Transport and animal movement



Diseases like to “Hitch a Ride”



- The objective of transportation biosecurity is to minimize the risk of disease transfer caused by trailer, driver and associated equipment.

Transport - Correct Sequence

High health status to lower health status

Low animal density to High Animal Density

Pig Flow – younger (naïve) to older (mature immunity)



Transport

- How to really get rid of a Pathogen
- Cleaning, washing, disinfecting, drying



Basic Guidelines for Loadout Procedures

- The *Line of Separation* is defined as the line between the area that is to be used by the transporter and the area to be used by farm or market personnel.

No cross traffic at this point!



Transporter Guidelines

- When going to another site or packing plant, wear coveralls and boots when outside of the truck to prevent contamination in the cab of the trailer
- **Establish a clean and dirty zone for farm and transport workers** to follow during load-in and load-out
- Completely clean, disinfect and dry trailers after use; this is especially important when going to commingled sites like **cull depots, packing plants or buying stations**
- Cleaning and disinfection involves:
 - Removal of dirty shavings, manure and other debris from the trailer
 - The use of a detergent soap can help to break down dried manure and speed up the wash process
 - After cleaning the trailer, use a disinfectant according to label directions to kill the virus
- Make sure to wash and clean coveralls, boots and other equipment after transporting pigs and before contact with other pigs
- Clean and disinfect the interior of the tractor cab before contact with other pigs
- Once the tractor and trailer is clean, park in a secure, clean location to dry away from other vehicle traffic

People movement – who ?



1. How to “drag” a germ with you all day!



**MODULE 3: Pig Transport –National Bio-security Transport
Training - CSHB**



Assessing visitor risk and controlling access

- Provide a farm gate sign
- Place restricted entry notices on doors to animal facilities
- Place a sign on where to park
- Keep a visitors log with names dates and vehicles
- Determine if and what type of farm visited last
- Restrict access to essential visitors only
- Insist on clean clothing or supply the clothing at your farm

Guidelines to Visitor Risk Assessment

	Low Risk	Moderate risk	High Risk
Number of farm visits per day	No other farm contact	One or occasionally more than one farm per day	Routinely visits many farms or auctions.
Protective clothing	Wear sanitized shoes or boots. One pair of clean coveralls per site	Wears sanitized shoes or boots. If considered clean, may not change coveralls.	Does not wear clean or protective clothing.
Animal Ownership	Does not own and/or caretaker for livestock	Owns and/or cares for a different species.	Owns and/or cares for a similar species and production type.
Contact with Animals	No animal contact	Minimal or no direct contact to the housing facilities.	Regular contact with animals.
Biosecurity Knowledge	Understands and promotes biosecurity for agriculture	Aware of basic biosecurity principles but is not an advocate.	Little appreciation or understanding of biosecurity principles
Foreign Travel	Does not travel outside of the U.S.	Limited travel outside of the U.S. and without animal contact.	Travel to foreign countries with animal contact in those countries.

Attention:

Please notify
upon arrival:

For the health of our
animals and yours, all
visitors should have:



Clean Hands



Clean Shoes



Clean Clothes



MICHIGAN STATE UNIVERSITY | Extension

ATTENTION:

Visitor Parking Area

Farm Biosecurity
in Place



MICHIGAN STATE UNIVERSITY | Extension

ATTENTION

RESTRICTED



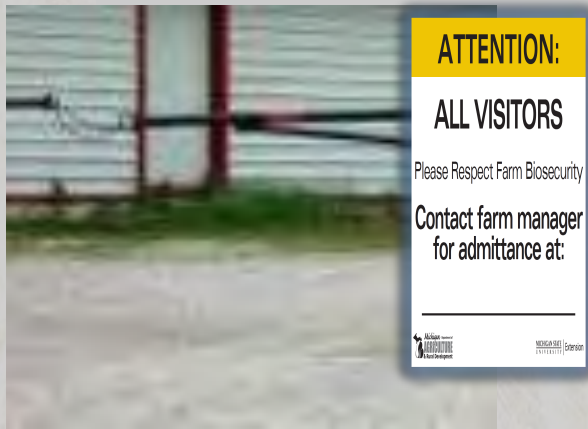
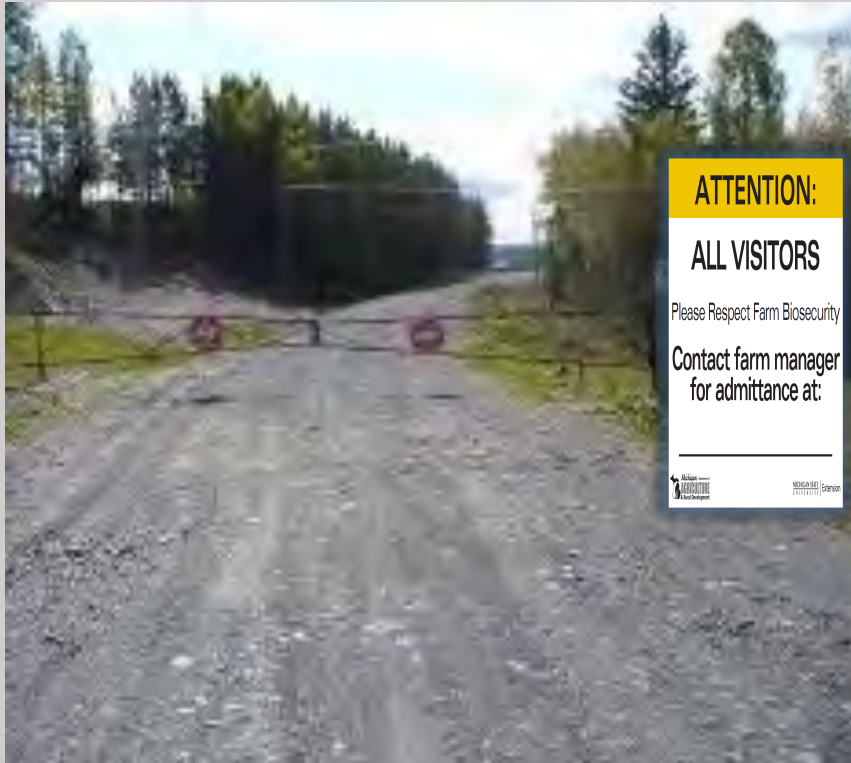
ACCESS

ZONE



MICHIGAN STATE UNIVERSITY | Extension

Sign placement (CAZ)



Sign placement

Restricted Access Zone (RAZ)



Materials provided by CSHB

ATTENTION:

ALL VISITORS

Please Respect Farm Biosecurity

**Contact farm manager
for admittance at:**

ATENCIÓN:

TODOS LOS VISITANTES

Por favor, respeten
la Bioseguridad Agrícola

**Comuníquese con el
gerente de la granja
para su ingreso:**

FARM VISITOR POLICIES



Comply with all
posted signs, rules,
and biosecurity regulations
on this farm.

Your cooperation
is appreciated for your
own safety and the
health of our animals.

- Only enter this farm with permission
- Park at the entrance or in designated parking areas
- Check-in with farm personnel upon arrival and sign the visitor log
- Follow instructions provided by farm personnel at all times
- Leave deliveries in areas designated by farm personnel
- All visitors must be accompanied by farm personnel at all times
- Do not handle or contact animals unless permission is granted by farm personnel



Danish Entry Method

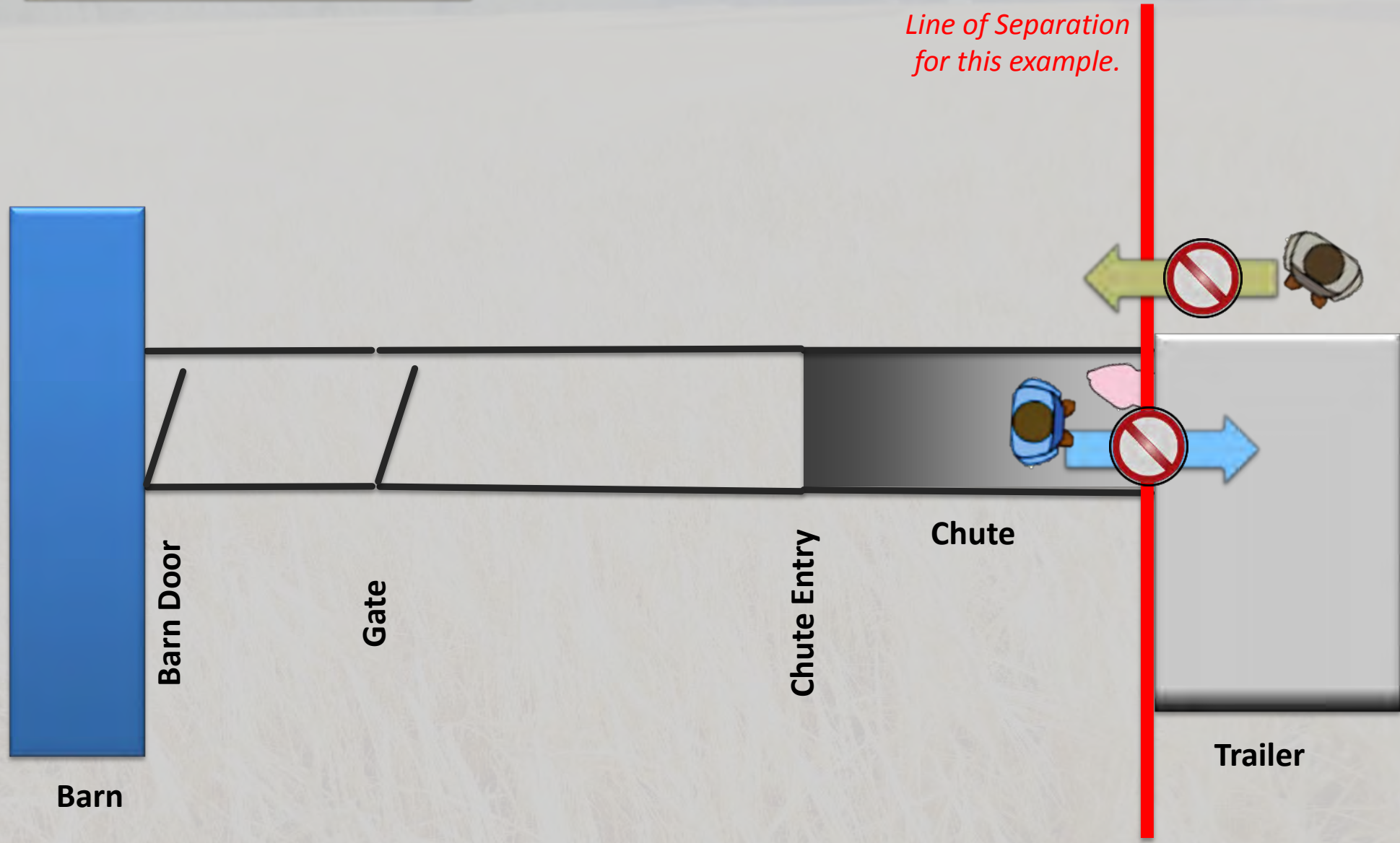


Materials provided by CSHB

One Example of Loading or Unloading Biosecurity Protocol



6. Biosecurity



These are the two products mentioned in the webinar.
Accelerated Hydrogen Peroxide.

Does not require personal protective equipment when using the product.

Do not need to rinse off when using for feeding equipment.

Detergent and disinfectant in one

Has short contact time requirements 1 min. Other disinfectants require 5 to 10 min contact time.

Maintains disinfectant properties in the presence of some organic material.

I use the wipes on arrival to a farm and when leaving to wipe my hands and my footwear.





presenteeism



Summary - Owners, Employees and Visitors,

- All visitors, farm owners and employees have a shared responsibility
- Visitors need to be aware of biosecurity and follow the farm's recommendations.
- Visitors must be prepared to accept all reasonable directives from the farmer.
 - Showering into the facility
 - Changing into farm delegated coveralls and boots
 - Or arriving with clean clothes and boots and wearing foot covers.
 - Sign a visitor's log
 - If you have flu like symptoms – please stay out of hog and poultry barns.

PEST AND WILDLIFE MANAGEMENT CONTROL



RODENTS

- Cats are often used for rodent control
 - Success is not assured
 - Cats are also disease vectors like rodents such as toxoplasmosis
 - Cats are not allowed for quality control programs



Rodent Control: why?...

- Destroy buildings and property
- Implicated in causing fires.
- Consume feed and spoil 10Xs more.
- Vectors for many diseases such as Lyme, Hantavirus, Leptospirosis, salmonella etc



Important Steps

- Remove vegetation and garbage around premises
- Make sure premises are rodent-proof, gravel barrier
- Remove water and feed sources



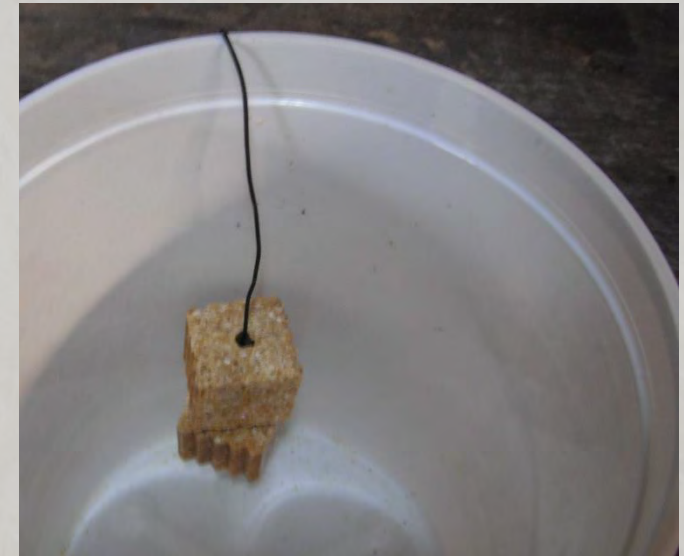
Keys to Rodent control

- Map your Barn
 - Number the stations
 - Strategic placement
- Record Sheets
- Asses / Readjust
 - Rodent pressure
 - Plug entry points
 - Solve issues
- Rotate



Tools

- **Bait Stations**
 - Allow rodents to eat calmly and safe
 - Protect non target species
- Traps



Important Steps

- Remove vegetation and garbage around premises
- Make sure premises are rodent-proof, gravel Barrier
- Remove water and feed sources

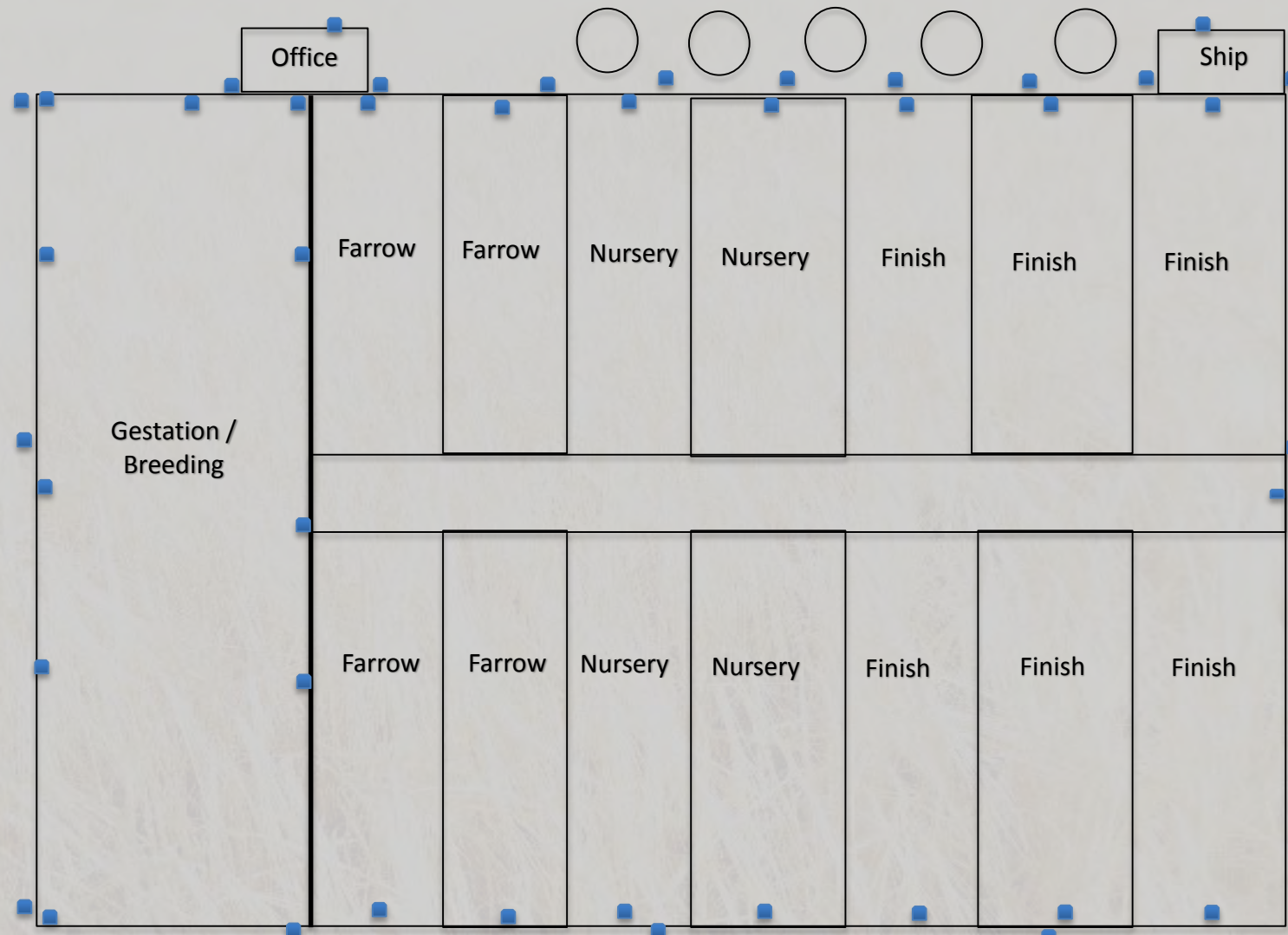


Stations

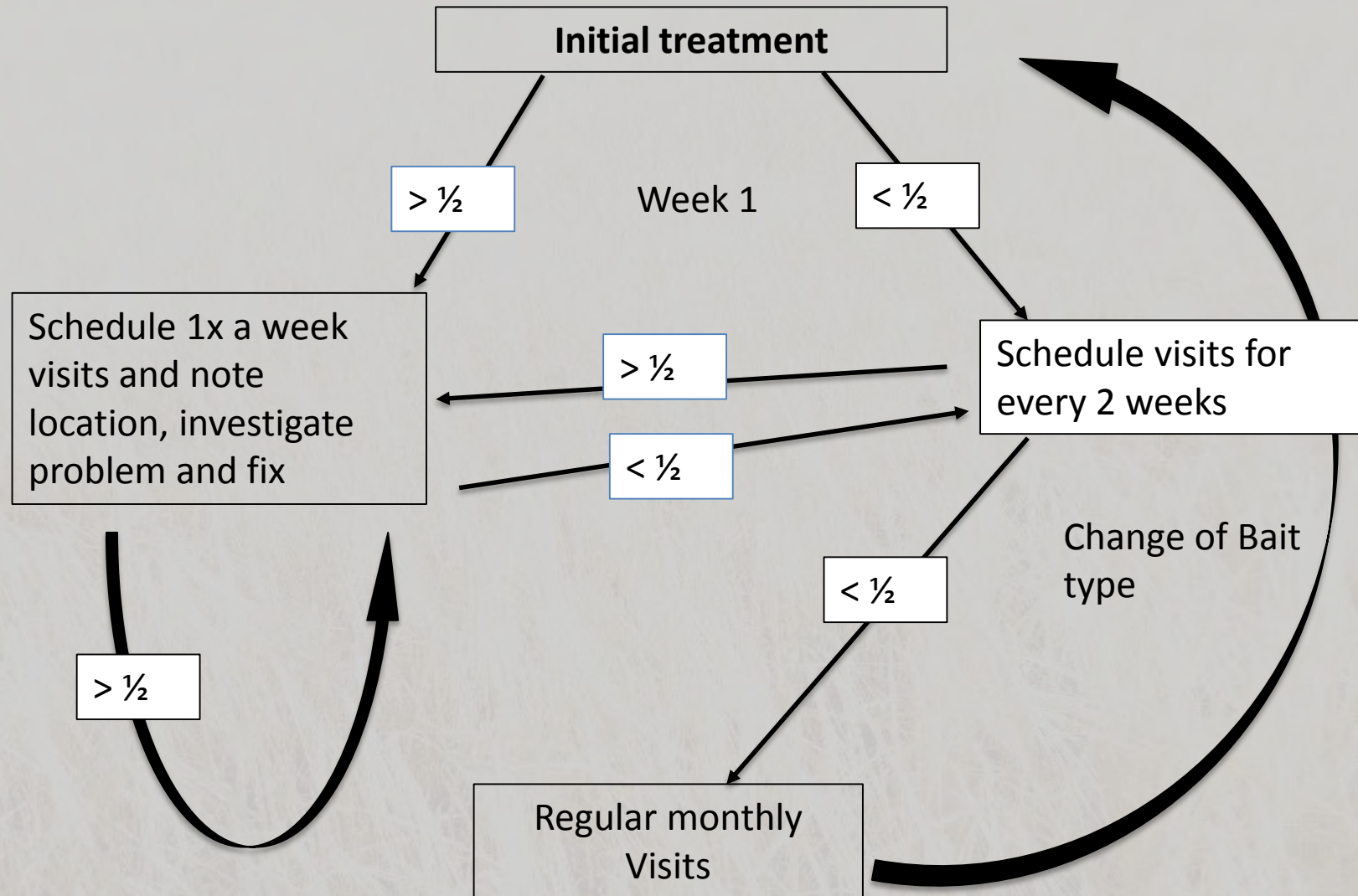
- Numbered
- Secure Bait and stations
- Proper amount



PLANS



ASSESSMENT / READJUSTMENT



$> \frac{1}{2}$ = more than half of the bait place was consumed
 $< \frac{1}{2}$ = less than half of the bait was consumed

Rodent control images and plans courtesy of Dave Van Wallegham

Mortality Management

- <http://articles.extension.org/pages/19942/managing-livestock-and-poultry-mortalities>
- Incineration
- Burial
- Composting

Dead Stock Bin



Manure

- Oral-Fecal contamination
- Perfect host medium – moisture
- Vectors easily
- High commercial value
- When aerosolized transfers of virus and bacteria.
- Bacterial (salmonella, Johne's disease, tuberculosis)
- Viral (e.g hog cholera, PRRS, PEDv, foot and mouth disease, bovine viral diarrhea, sheep and horse disease)
- Protozoal (coccidiosis and cryptosporidiosis)
- Parasitic (e.g ascarids, sarcocystis)



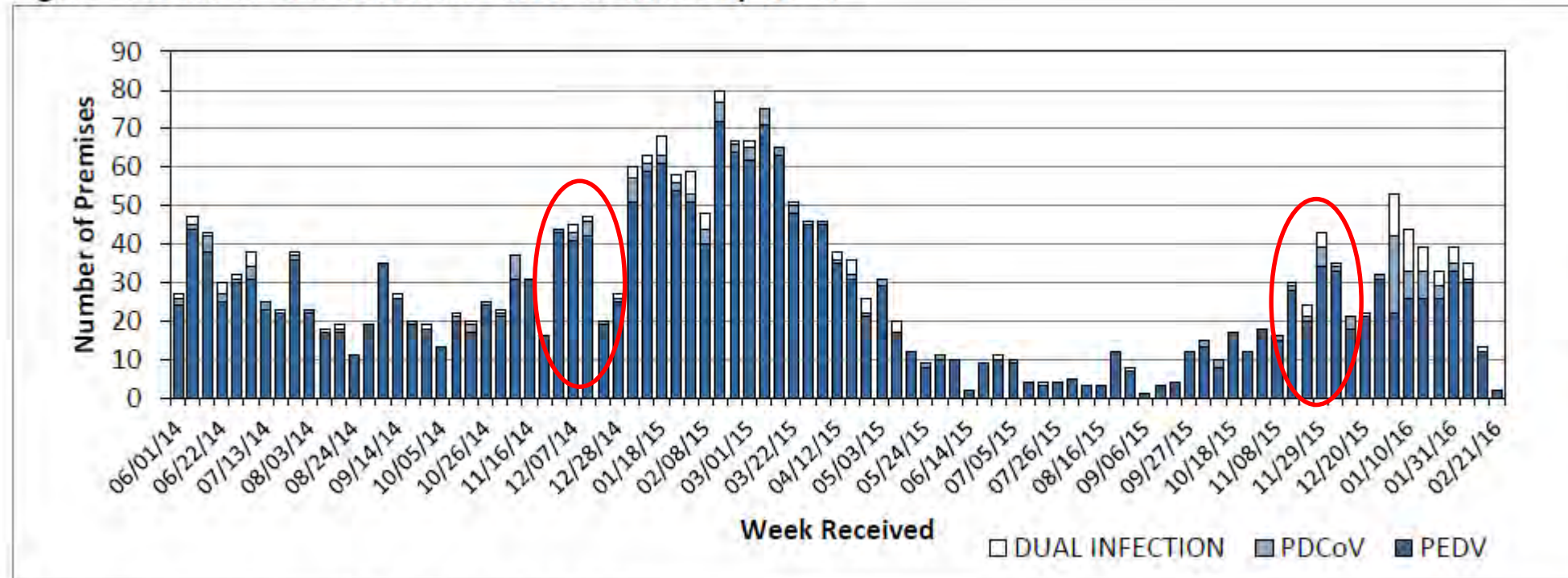
A biosecurity and biocontainment tale

Porcine Epidemic Virus



Biosecurity in Swine

Figure 1. Number of Confirmed Positive Premises by Week ^a



^aWeek the sample was received at the laboratory for testing.

Routine manure removal from swine operations: A potential mechanism for pathogen dispersion.

M.L. Millerick-May¹ MSc, PhD, G.A. May², E. Ferry², M.E. Gemus-Benjamin³ MS, DVM

¹College of Human Medicine, Michigan State University, East Lansing, Michigan; ² Extension Agriculture and Agribusiness, Michigan State University, East Lansing, Michigan; ³College of Veterinary Medicine, Michigan State University, East Lansing, Michigan

Introduction

Novel Swine Enteric Coronavirus Disease (SECD), a disease caused by the porcine coronaviruses (Porcine Epidemic Diarrhea Virus (PEDv) and Porcine Delta Coronavirus (PDCoV) are characterized by an acute, rapidly spreading viral diarrhea of pigs with clinical signs that are consistent with the now endemic (antigenically different) Transmissible Gastroenteritis virus (TGEv) (USDA, 2014). Transmission is predominantly through fecal-oral contact in swine, but may be introduced by other routes (i.e. humans, equipment, etc.).

The index case of Porcine Epidemic Diarrhea Virus (PEDv), a single-stranded coronavirus, in the United States was identified in May, 2013. The virus quickly spread throughout the U.S. and has been reported in all but seventeen states (USDA, 2015). On June 2, 2015 the USDA Swine Enteric Coronavirus Disease Testing Summary reported 1,417 confirmed (cumulative) PEDv positive premises nationwide, and 4,974 positive accessions since June, 2014 (USDA, 2015). It is estimated over 7 million piglets were lost in the U.S. in 2014 due to PEDv (Myer and Steiner, 2014) despite the efforts by swine operations to adopt intensified biosecurity protocols.

Problem Statement

At present, there is a gap in knowledge relative to the identification of routine management practices performed at livestock facilities that – even when in compliance with established biosecurity protocols – have the potential to disperse pathogens to uninfected herds, and re-infect herds at previously affected sites.

Based on knowledge of routine management practices and evaluation of surveillance data (Figure 1.), we hypothesized that PEDv was likely to be present in bioaerosol during routine manure removal activities.

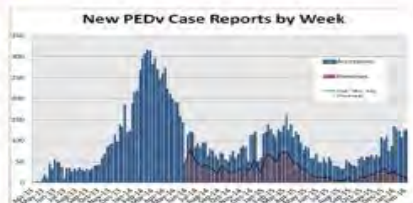


Figure 1. Increase in PEDv incidence within 1-2 weeks of routine manure removal suggests potential for environmental transport.

Source: <http://www.ams.org/Emergence/PEDv/PEDvWeeklyCase.pdf>

Methods

Rationale—Exposure, Viability, and Transport

- Primary Route of Exposure – Oral
- Viability > 6 months in stored wastes
- Transport - > 10 miles in aerosol (Figure 2.)



Figure 2. Viral particle size consistent with extended transport via bioaerosol. Source: Brock, R. D. et al. Circulation 2004;109:2655-2661

Protocol

- Swine facility recruitment: April 2014 – October 2015 (Table 1.)
- Bulk sample(s) collection - site of storage (tank, lagoon, etc.)
- Swab sample collection from inside wall transport tank
- 3 samples (bioaerosol) collected during 3 filling cycles (Figure 3.) consistent with site routine management practices (i.e. location, fill-rate, tank volume)(Figure 4.)
- Laboratory analysis performed at SDSU Animal Disease Research and Diagnostic Laboratory, and expanded to include PDCoV and PRRSV



Figure 3. Collection of bioaerosol during manure pump-out with filter media approximating the top of the fill-port at the point of dispersion of pathogen containing bioaerosol will disperse via laminar air movement.



Figure 4. Positioning of tractor and swing arm for earthen storage (lagoon) pump-out. Note substantial puddling on drive potentially resulting in pathogen transport via vehicle(s) and human (foot) traffic.

MSU#	SWT	HAISF	Site-visit	Storage Type	Capacity (ton/yr)	Clinical Signs	Observed	Laboratory Confirmation	Date
1	5/1/2015	Swine Manure	100	Pit	0	No	1/15/2014	No	2/1/2014
2	6/29/2015	Swine Manure	100	Pit	0	No	5/27/2015	Yes	4/23/2015
3	6/29/2015	Swine Manure	100	Pit	0	No	1/15/2014	No	1/25/2015
4	1/7/2015	Swine Manure	100	Pit	0	No	1/15/2014	No	1/25/2015
5	4/9/2015	Swine Manure	100	Pit	0	No	1/15/2014	No	1/25/2015
6	1/23/2015	Swine Manure	100	Pit	0	No	1/15/2014	No	1/25/2015
7	5/7/2015	Swine Manure	100	Pit	0	No	1/15/2014	No	1/25/2015
8	1/7/2015	Nursery	100	Pit	0	No	1/15/2014	No	1/25/2015

Table 1. Site, production phase, manure storage capacity, and presence of clinical signs (including date of first observation and laboratory confirmation). Note – sites without laboratory confirmation presumed positive as downstream in production system from sites known to be positive.

Results

- All (100%) bulk samples (storage pits/lagoons) tested positive for PEDv with cycle thresholds (Ct) ranging from 23.12-33.45
- Ninety-percent (9/10) of swab samples collected from the inside hatch of the manure hauler tested positive for PEDv with Ct's ranging from 29.07-36.20
- Four of ten (40%) sets of bioaerosol samples were positive for PEDv (Ct's 34.85-37.33)
 - 3 of 4 sets of samples that tested negative did not have pigs with documented clinical signs on site for > 4 months.
- >50% of samples testing positive for PEDv also tested positive for PDCoV
- At one site not testing positive for PEDv in bioaerosol, Porcine Reproductive and Respiratory Syndrome virus (PRRSV) was captured
- In all cases where results of bioaerosol sampling were positive for pathogen (PEDv, PDCoV, PRRSV), aerosol (mist), splashing, and roadway puddling was observed.

Conclusions

- Pathogen (PEDv, PDCoV, PRRSV) containing bioaerosol have the potential to be dispersed during routine manure removal practices
- Cycle thresholds observed, while 'high', are consistent with what would be expected as a result of ambient dilution
 - Viability at present not able to be determined in absence of bioassay
 - Based on published studies, assume virus is viable and in size range (bioaerosol) environmental transport is likely
 - Re-infection
 - Transport to distant sites
- Current biosecurity procedures that address direct contact of a surface with contaminated fecal matter likely to be insufficient in preventing spread of pathogens (Figures 5.)
- Management activities external to the unit and not in direct contact with pigs are also important factors that may cause spread not only to units within close proximity (re-infection), but possibly units at significant distances from the point of aerosol generation
- Control of dispersion at the source should be key consideration in preventing disease transmission.

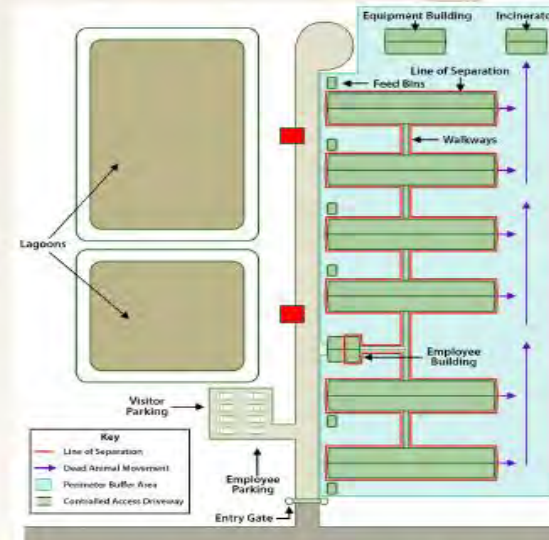


Figure 5. Common location (red boxes) for manure pump-out relative to access drive(s), routes of employee traffic, animal housing units, and earthen storage (lagoons). Illustrating the potential for dispersion of pathogen containing bioaerosol(s) and dirt as a result of laminar flow likely to reach animal housing units.

Figure adapted from Secure Pork Supply (SPS) Examples of Biosecurity Lines (http://www.securepork.org/Biosecurity/BiosecurityLines_August2015.pdf)

References

USDA APHIS Veterinary Services, 2015, USDA Swine Enteric Coronavirus Disease Testing Summary. Available: http://www.ams.org/Emergence/PEDv/PEDvWeeklyReport_140519.pdf . Last accessed July 2, 2015.

Myer and Steiner, 2014, Daily Livestock Report, Vol.12, No. 88, Available: www.dailylivestockreport.com. Last accessed June 5, 2014.

Alonso, C., Goede, D., Morrison, R.B., Davies PR, Rovira A, Marthäuser DG, Torremorell M. 2014 Evidence of infectivity of airborne porcine epidemic diarrhea virus and detection of airborne viral RNA at long distances from infected herds. *Veterinary Research* 2014, 45:73. <http://www.veterinaryresearch.org/content/45/1/73>

Toussaint, S. 2014. Infectivity of swine manure from pits at varying lengths of time post infection with Porcine Epidemic Diarrhea (PED) virus. National Pork Board PEDv Research Update. Available: <http://porkboard.amazonaws.com/sites/all/files/documents/PEDvResearch/Toussaint-14-246-Main.pdf>

Support

Michigan Pork Producers Association
MSU AgBioResearch



The advantage of PEDV ... Recommendations with stronger wording.

- limiting traffic (people and equipment) onto the farm,
- thoroughly cleaning and disinfecting anything coming onto the farm,
- enforcing downtime requirements and ***maintaining a log of visitors***,
- taking care when disposing of dead stock particularly if using a communal disposal method,
- isolating newly arriving animals and continuing vet to vet discussions about animal health at the herd of origin, and
- showering into the facility **where practical** and changing into clean boots and coveralls
- (veterinarians should also be careful not to track the virus between herds on their person, equipment or vehicles)

Aerosols

*Solid or liquid particles
in suspension in the
air...*



National Bio-security Training - CSHB

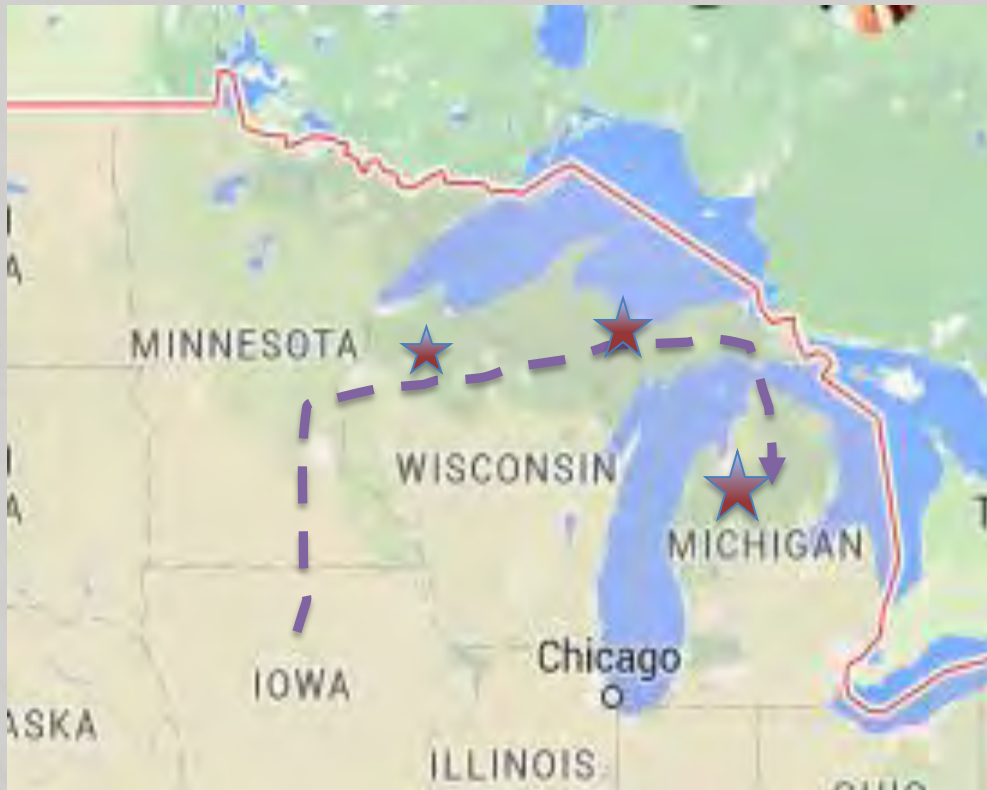
Recommendations of Biosecurity in Swine



- All in all out
 - Entry in March – Exit in October
 - Clean between batches
- Separate by age
- Introduction of pigs
 - Health status – avoid someone else's problem
 - Vaccinate 25-28 days prior to entry
 - Gilts – feeder and finisher
 - Use AI if possible – frozen and fresh
 - Teaser boar

Recommendations of Biosecurity in Swine

Spread



Porcine Reproductive and Respiratory Syndrome (PRRS)



Recommendations of Biosecurity in Swine

Internal parasites

- Compete directly with the pig for nutrients consumed by interfering with digestion
 - Decreased feed conversion
 - Decreased weight gain
 - Overall, more expensive
- **Key sign** – pigs on dirt lots with uneven growth
- <http://www.thepigsite.com/pighealth/article/414/large-white-worms-or-ascarids-ascaris-suum/>



Recommendations of Biosecurity in Swine

External parasites



<http://www.thepigsite.com/pighealth/article/632/sarcoptic-mange/>

- Prevent introduction of diseases
 - Management of new arrivals

Recommendations of Biosecurity in Cattle



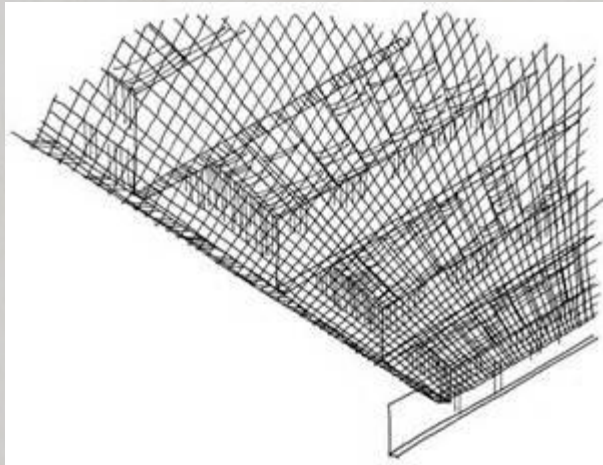
- Maintain a closed herd
 - Use home grown replacements for maintaining and increasing herd size
 - Prevent fence-line contacts of stock with other cattle
 - Use artificial insemination for breeding and not bring in the bulls
 - Not exhibit at shows
 - Restrict visitors
- Isolate new arrivals
 - Use separate housing, feeding and birthing areas
 - Use separate housing and feeding areas
 - Prevent manure movement from the isolation area to the rest of the herd.
 - Isolate for 21-30 days
 - Observe and examine for early disease detection
 - Milk isolated cows last
 - Test for disease prior to addition to the main herd.

Recommendations of Biosecurity in Cattle



- Know the source of purchased animals
 - Pregnant animals
 - Vaccination schedule
 - Known health status
- Use vaccines
 - Can be given during isolation period
 - IBR and BVD are known in Michigan
- Control birds
 - Seal off openings to silo roofs
 - Screen ledges used by pigeons
- Control rodents
 - Rodent proof buildings

Recommendations of Biosecurity in Cattle



- **Control rats and mice**
 - construct rodent-proof buildings
 - eliminate safe hiding places and nesting sites
 - remove food and water supplies
 - destroy existing populations by poisoning, fumigating, or trapping
- **Control wildlife**
 - Starlings becoming an increasing problem on dairies.
 - See a specialist for assistance

Recommendations of Biosecurity in Cattle



- People and Pets
 - Discourage visitors from entering the feeding and housing areas
 - Insist workers wash hands with soap and water prior to milking and after working with sick animals.
 - Control cat and dog movement between farms
 - Vaccinate farm dogs and cats for rabies
 - Wash farm clothing with detergent and bleach/washing soda.
- Vehicles and traffic
 - Provide a separate lane for milk and feed delivery trucks
 - Provide cattle with walkways that do not cross truck lanes or feeding alley.
 - Avoid using manure handling equipment for feed handling

Recommendations of Biosecurity in Cattle



- Clean equipment
 - thoroughly wash and disinfect the inside, outside and tires of equipment shared with neighbours
 - use a new disposable needle for each animal when administering treatments
 - disinfect dehorners, hoof knives and trimmers after using on each animal
 - use your own halters and clippers rather than borrowing them
 - sanitize nursing bottles and buckets after each calf feeding
 - maintain clean water troughs, water bowls, and feed mangers
 - clean and sanitize equipment and materials used for handling deadstock

Management of Groups and Housing – Cattle

Table 1. Examples of diseases spread from older to younger cattle

Disease	Transmission
E. coli scours	contact with feces
Salmonellosis	contact with feces
Leptospirosis	contact with urine, uterine discharge, aborted foetus
Johne's	contact with feces
Enzootic Bovine Leucosis	contact with blood from needles, dehorner, tattoo pliers
Bovine Virus Diarrhea	contact with body fluids from sick and carrier animals
Gastrointestinal parasites	contact with eggs in feces
Coccidiosis	contact with oocysts in feces

- maternity-pen and newborn-calf management practices that prevent calves from ingesting manure.
- separate pre-weaned dairy calves from all other age groups
- house each milk-fed dairy calf in an individual pen or hutch
- place hutches away from dairy barn exhaust fans
- Or house milk-fed calves in groups of less than eight calves
- 4-8-month-old dairy calves in groups separately from older heifers
- yearling and breeding age dairy heifers separately
- separate dry dairy cows from milking cows
- segregate cows with mastitis to the end of the milking order
- separate replacement beef heifers from the cows
- For calving, move beef cows to a clean pasture, away from the wintering area
- organize chore routine to feed and milk isolated cattle last

Recommendations of Biosecurity in Poultry



- Use all in all out when possible and wash in between batches. Your C&D (Clean and Disinfection) protocol may be different depending on pathogen concern.
- Catchers
 - must use separate clothing, footwear, mask and hair gear for each farm.
 - C&D catching equipment between loadings
 - Always visit youngest to oldest and from healthy to sick flocks
- Do not allow managers and employees to visit other farms
- Avoid sharing farm equipment
- Avoid placing poultry houses near ponds
- Ensure poultry houses are bird proof.
- Do not allow dogs and cats in poultry houses.
- Check and Collect mortalities daily.
- Water Sanitation: if sourcing from open water lagoons. Migratory birds excretion can spread Influenza to poultry and swine.
- Clean and disinfect water lines between batches to reduce biofilm that harbors bacteria and virus.


Poultry Biosecurity – Early Detection



- Diseases such as Avian Influenza can be introduced by
 - People
 - Equipment
 - Wild birds
 - Rodents,
 - Litter, carcasses
 - Aerosol spread
- Early detection will limit the impact of a disease outbreak and reduce the likelihood of introducing to other flock ... perhaps back to you!
- Signs that may indicate a significant disease outbreak include (but are not limited to):
 - high mortality
 - drop in egg production
 - reduced feed/water consumption
 - respiratory and nervous signs.
 - Swollen eyelids
- Seek veterinary assistance if your flock looks sick or abnormal.

Biosecurity Risk Factors for Raising Backyard Poultry

Backyard Biosecurity
6 Ways To Prevent Poultry Diseases



1. Keep Your Distance.
Restrict access to your property and your birds. Consider fencing off the area where you keep your birds and make a barrier area if possible. Allow only people who take care of your birds to come into contact with them. If visitors have birds of their own, do not let them near your birds. Wild birds should not have contact with your flock because they can carry germs and diseases.

2. Keep It Clean.
Wear clean clothes, scrub your shoes with disinfectant, and wash your hands thoroughly before entering your bird area. Clean cages and change food and water daily. Clean and disinfect equipment that comes in contact with your birds or their droppings, including cages and tools. Remove manure before disinfecting. Properly dispose of dead birds.

3. Don't Haul Disease Home.
If you have been near other birds or bird owners, such as at a feed store, clean and disinfect car and truck tires, poultry cages, and equipment before going home. Have your birds been to a fair or exhibition? Keep them separated from the rest of your flock for at least 2 weeks after the event. New birds should be kept separate from your flock for at least 30 days.

- https://www.aphis.usda.gov/publications/animal_health/2011/prevent_poultry_disease.pdf

- wild birds, rodents and domestic animals (e.g. cats and dogs)
- contaminated people (e.g. hands, clothing, footwear, hair)
- contaminated poultry equipment (e.g. hauling crates, catching equipment, feeders and waterers)
- contaminated water source
- contaminated vehicles and other farm equipment (e.g. manure trucks and spreaders, tractors, feed trucks)
- infected neighbouring flocks (commercial or backyard) and live bird markets.

Recommendations of Biosecurity in Horses



- New arrivals
 - Most common way infectious disease is spread
 - Veterinary examination is recommended prior to purchase
 - Specific tests might be advised
 - New horses should be isolated for 30 days
 - Monitored daily for signs of illness
 - Separate stable, equipment, tack
 - Mark isolation area with red tape
 - Handle new horses last (AM and PM) and hands should be washed when leaving the paddock/stall.
 - Vaccination
 - determine the diseases of importance
 - Determine best timing of the vaccine
 - Identify which horses will benefit

Recommendations of Biosecurity in Horses



– Sick horses:

- Assign specific persons for sick horses if possible. If not, then healthy horses first.
- Disposable gloves and booties and barrier clothing should be used for sick horses.
- After handling and care – dispose of barrier clothing. Hands must be washed with running water and liquid soap.

– Entry:

- Ideally there should be one entry and exit for visitors.
- Parking should be away from horses
- If veterinarian or farrier must park closer be sure they have washed their vehicle and wear booties or disinfected footwear.
- Record of visitors.

Recommendation of Biosecurity in Sheep

<http://www.sheep101.info/201/biosecurity.html>



Select Healthy Sheep

- Start with healthy sheep from an established closed herd ~ preferably for 3 or greater.
- Or work with a reputable dealer.
- Observe sheep at purchase for signs of lameness (foot rot), abscess, sore mouth, or ringworm. Check teeth for age.
- Palpate the udder to determine if the udders are soft and well developed. Hard udders are indicative of pneumonia (OPP).
- Mature ewes is a good place to start your herd.
- Isolation – 30 days is preferable for the following reasons:

- 1 allows time for animals to express clinical disease
2. allows time for disease cool down if occurs
- 3 allows time for vaccination and deworming and post vaccination cool down

Foot rot is contagious



Isolation (calf huts)

VFD - Antibiotics in Feed

Medically important feed grade antibiotics and water soluble medication will not be available Over the counter but will require veterinary directive:

Veterinary Feed Directive – in feed meds

Veterinary prescription for water soluble med

This directive requires

Veterinary Client Patient Relationship (VCPR)

Dosage at therapeutic levels only.

VFD is 6 months.

Producer maintain records for 2 years.

Resources

- Michigan State University Extension – Pork
<http://msue.anr.msu.edu/topic/info/pork>
- Swine Management - Pork Information Gateway (PIG)
<http://porkgateway.org/resources/type/factsheets/>
- Backyard Biosecurity: 6 Ways to Prevent Poultry Diseases (USDA-APHIS)
https://www.aphis.usda.gov/publications/animal_health/2011/prevent_poultry_disease.pdf
- Biosecurity for Exotic Fowl - (Texas A&M) <http://posc.tamu.edu/wp-content/uploads/sites/20/2012/08/I-50871.pdf>
- Clean and Mean: Effective Targeting for Disinfectants and Disinfectant Combinations (Alberta Ag & Rural Development)
<http://www1.agric.gov.ab.ca/%24department/deptdocs.nsf/all/pou3653?opendocument>
- Sanitation: Cleaning and Disinfectants - (Mississippi State University)
<http://msucares.com/poultry/diseases/sanitation.html>

Summary – the importance of biosecurity to agriculture production

Biosecurity provides:

- Part of on-farm food safety programs
- Greater consumer acceptability of food supply
- Improved animal welfare and well-being
- Improved efficiency and profitability for the farmer.





Thank You
 Thomas Guthrie
 Beth Ferry
 Gerald May
 Shelby Burlew
 Dale Rozeboom

- Questions and copies?
- gemus@msu.edu

– Don't bring it home

Porcine Epidemic Diarrhea Virus is a threat to herd health

PED is a virus that can be easily spread to your swine herd. Proper precautions and biosecurity methods should be in place to help protect your animals from this detrimental virus. If you suspect that your herd has been exposed to this virus, please call your veterinarian immediately.

	<p>After visiting an area with comingled pigs, change your footwear (boots or boot covers) before getting in your truck.</p>	<p>Do not enter Restricted Access Permission to enter For access call _____</p>	<p>Have signage on your farm to limit visits from unknown guests. Post a contact number.</p>
	<p>Washing hands before and after contact with animals will decrease the spread of disease.</p>		<p>Have designated clothing for each pig barn.</p>
	<p>Clean trailers, boots and equipment and use effective disinfectants such as Clorox in a 1:32 ratio.</p>		<p>Have a separate isolation area for all incoming animals on your farm. House them separately for at least 28 days.</p>
	<p>Use an off-site vehicle wash, being sure to clean tires and truck mats, after visiting an area with pigs from other farms.</p>		<p>Use an off-site vehicle wash, being sure to clean tires and truck mats, after visiting an area with pigs from other farms.</p>

For more information on this or other herd health concerns please contact a Michigan State University Extension county office or call 888-MSUE4MI (888-678-3464) to locate an expert in your area.