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

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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
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...
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

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

- Farmers, employees and workers
- Neighbors and friends
- Veterinarians
- Transporters
- Custom manure/biosolids haulers and transporters
- Deadstock collectors
- Municipal/regulatory personnel/inspectors
- Service representatives
1. How to “drag” a germ with you all day!

MODULE 3: Pig Transport – National Bio-security Transport Training - CSHE
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

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

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

- Clean Hands
- Clean Shoes
- Clean Clothes

ATTENTION:
Visitor Parking Area
Farm Biosecurity in Place

ATTENTION
RESTRICTED
ACCESS ZONE
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:

_____________________

Michigan, Department of Agriculture & Rural Development

Michigan State University Extension
FARM VISITOR POLICIES

- 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

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.
Visitors Log

ABC Farms Visitors log.
I agree to adhere to the visitor policies of ABC Farms that I have not visited another farm in the past 24 hours and my clothes, footwear and vehicle are clean.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Time in</th>
<th>Time out</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/9/16</td>
<td>Madonna Benjamin</td>
<td>7:00 pm</td>
<td>9:00 pm</td>
<td>M. Benjamin</td>
</tr>
</tbody>
</table>
Danish Entry Method

Materials provided by CSHB
One Example of Loading or Unloading Biosecurity Protocol
6. Biosecurity

Line of Separation for this example.
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.
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 diseases vectors like rodents such as toxoplasmosis
- Cats are not allowed for quality control programs

Rodent control images and plans courtesy of Dave Van Wallegham
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

Rodent control images and plans courtesy of Dave Van Wallegham
Keys to Rodent control

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

Rodent control images and plans courtesy of Dave Van Wallegam
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

Rodent control images and plans courtesy of Dave Van Wallegham
Stations

- Numbered
- Secure Bait and stations
- Proper amount

Rodent control images and plans courtesy of Dave Van Wallegham
PLANS

Gestation / Breeding

Office

Farrow

Farrow

Nursery

Nursery

Finish

Finish

Finish

Finish

Gestation / Breeding

Farrow

Farrow

Nursery

Nursery

Finish

Finish

Finish

Finish

Rodent control images and plans courtesy of Dave Van Wallegahm
ASSESSMENT / READJUSTMENT

Initial treatment

Schedule 1x a week visits and note location, investigate problem and fix

> ½

Week 1

< ½

Schedule visits for every 2 weeks

> ½

Change of Bait type

< ½

< ½ = less than half of the bait was consumed
> ½ = more than half of the bait place was consumed

Regular monthly Visits

Rodent control images and plans courtesy of Dave Van Wallegham
Mortality Management

- Incineration
- Burial
- Composting
Dead Stock Bin

MODULE 1: Definitions
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

*Week the sample was received at the laboratory for testing.
Routine manure removal from swine operations: A potential mechanism for pathogen dispersion.

M.L. Miller-Kay, M.S., Ph.D., C.A. May, E. Perry, M.E. Gouras-Benjamin, M.S., D.V.M.
1College of Human Medicine, Michigan State University, East Lansing, Michigan; 2Extension 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 (SECDV), a disease caused by the porcine coronavirus (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 porcine epidemic diarrhea virus (PEDV) and PDCoV. Transmission is predominantly though fecal-oral contact in swine, but may be introduced by other routes (i.e., humans, equipment). The index case of Porcine Epidemic Diarrhea Virus (PEDV), a single-stranded coronavirus, in the United States was identified in May 2013; the virus was quickly spread throughout the US and has been reported in all but seven states (USDA, 2013). On June 3, 2013, the USDA Swine Enteric Coronavirus Disease-Testing Summary reported 422 confirmed (cumulative) PEDV positive premises nationwide, and 407 positive accessions since June, 2014 (USDA, 2014). It is estimated over 7 million piglets were lost in the US in 2014 due to PEDV (Myers and Stiner, 2014) despite the efforts by swine operations to adopt expanded 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—when in compliance with established biosecurity protocols—could potentially spread pathogens to swine herds, and be seedbeds for previously affected sites. Based on knowledge of routine management practices and evaluation of surveillance data (Figure 1), we hypothesized that PEDV is likely to be present in biosecurity during routine manure removal activities.

Methods

Rational—Exposure, Viability, and Transport

- Primary Route of Exposure = Oral
- Viability = 8 months in stored material
- Transport = > 10 miles in second (Figure 2)

- 5000 g/m² feed samples (storage) taken for PEDV RNA and PEDV antigen samples collected from the inside borders of the material handler treated for PEDV RNA ranging from 10^-3 to 10^-5 c.f.u./g dry weight (Figure 3).

- Results

- All (100%) feed samples (storage) tested positive for PEDV RNA and PEDV antigen (c.f.u./g) ranging from 10^-3 to 10^-5 c.f.u./g.

Protocol

- 5000 g/m² feed samples (storage) taken for PEDV RNA and PEDV antigen (c.f.u./g) ranging from 10^-3 to 10^-5 c.f.u./g.

- Samples collected from inside manure handling tanks

- Samples collected from outside manure handling tanks

- All samples collected from inside manure handling tanks were positive for PEDV by PCR (10^-4 c.f.u./g). The results of the PEDV RNA and PEDV antigen samples were positive for PEDV RNA and PEDV antigen (c.f.u./g) ranging from 10^-4 to 10^-5 c.f.u./g.

- Conclusions

- Pathogens (PEDV, PDCoV, PRV) continuing to be present in feed, and seedbeds for PEDV continuing to be disrupted during routine manure removal practices (Figure 4).

- Viability of pathogens also to be considered (Figure 5).

- Conclusion

- Current biosecurity protocols that address direct contact of species with contaminated fecal material (Figure 6) may be insufficient in preventing spread of pathogens (Figure 6).

- Management activities external to the farm and not in direct contact with pigs are also important factors that may spread pathogens outside of swine production facilities, but these are not always considered in the past few years.

- Cost of dispersal of these sources should be key determinants in preventing disease transmission.

References

Myers and Stiner, 2014. Feed quality of feed samples taken from the inside borders of the material handler treated for PEDV RNA ranging from 10^-3 to 10^-5 c.f.u./g dry weight. Unpublished.

Acknowledgments

Agricultural Research Service, USDA; National Pork Board; Michigan State University; Michigan State University, East Lansing, Michigan; East Lansing, Michigan; University Research Board; Michigan State University; Michigan State University, East Lansing, Michigan; University of Michigan; University of Michigan, East Lansing, Michigan.

Support

Michigan Pork Producers Association, Michigan Agricultural Experiment Station.
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...

Dr. Brad Chappell, Manitoba, 2006.
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

Recommendations of Biosecurity in Swine

External parasites

http://www.thepigsite.com/pighealth/article/632/sarcoptic-mange/
Recommendations of Biosecurity in Cattle

• Prevent introduction of diseases
  – Management of new arrivals
    • 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
• 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

• 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

<table>
<thead>
<tr>
<th>Disease</th>
<th>Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli scours</td>
<td>contact with feces</td>
</tr>
<tr>
<td>Salmonellosis</td>
<td>contact with feces</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>contact with urine, uterine discharge, aborted foetus</td>
</tr>
<tr>
<td>Johne's</td>
<td>contact with feces</td>
</tr>
<tr>
<td>Enzootic Bovine Leucosis</td>
<td>contact with blood from needles, dehorners, tattoo pliers</td>
</tr>
<tr>
<td>Bovine Virus Diarrhea</td>
<td>contact with body fluids from sick and carrier animals</td>
</tr>
<tr>
<td>Gastrointestinal parasites</td>
<td>contact with eggs in feces</td>
</tr>
<tr>
<td>Coccidiosis</td>
<td>contact with oocysts in feces</td>
</tr>
</tbody>
</table>
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

- 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.

[Backyard Biosecurity 6 Ways To Prevent Poultry Diseases]

1. Keep Your Distance.
   - Restict 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 have care of your birds to come into contact with them. Visitors have birds of their own, do not let them near your birds.?” Wild birds should not have contact with your flock because they cannot 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. Return material before disinfecting. Properly dispose of dead birds.

3. Don’t Have 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.

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

Foot rot is contagious

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
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)


• 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