

## **Patterson et al., 2016: FMD Survey Instrument**

*Skip logic information is in italics below each question; additional display logic is above each question and is in **bold**.*

Consent:

Dear expert, The University of Minnesota's Center for Animal Health and Food Safety is working on projects to support business continuity in the event of a foreign animal disease (FAD) outbreak affecting the US pork industry. To analyze the trade-offs faced in effectively managing a FAD response, we are seeking broad pork industry input to identify 1) pork supply chain movements with the highest risk of Foot and Mouth Disease (FMD) spread to other susceptible livestock; 2) pork supply chain movements most critical to business continuity in the US pork industry. You have been identified as an active industry participant who could help inform our study. If you agree to respond, after providing some basic information on your role in the industry, we ask you to please consider movements associated with pork production regarding risk of disease spread and impact on business. In this survey we will be asking you to think about what an FMD diagnosis in the United States would mean for your business, more specifically: What movements would you expect to be the most likely to spread disease from one swine facility to another. What movements are most critical to the continuation of your business and the welfare of your animals.

This survey should take about 10 to 20 minutes to complete.

**Confidentiality:** The records of this study will be kept private. In any reports published or data shared, we will not include any information that will make it possible to identify respondents. Research records will be stored securely and study data will be encrypted according to current University policy for protection of confidentiality. **Voluntary Nature of the Study** Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota or with other cooperating institutions within this project. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

**Contacts and Questions**

The researchers conducting this study are: Tim Goldsmith, Tim Snider, Fernando Sampedro, Peter Davies, and Gilbert Patterson. Please contact us with any questions or further input regarding this risk prioritization tool: CAHFS, College of Veterinary Medicine, University of Minnesota, 612-625-0883, gold0188@umn.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

**Statement of Consent**

- I have read the above information. I have asked questions and have received answers. I consent to participate in the study.
- I do not consent to participate in the study.

*Skip Logic: If I do not consent to participate, skip to end of the survey.*

## **Section 1: Demographics**

Dem1: What sector of the swine industry do you most identify yourself with?

- Swine Producer
- Harvest (pork processing and/or packing) Please specify: \_\_\_\_\_
- Allied industry (e.g. veterinarian, academia, government, feed company, pharmaceutical company, etc.) Please specify: \_\_\_\_\_
- Retail and/or distribution Please specify: \_\_\_\_\_

*Skip Logic:*

*If Retail and/or distributions is selected, skip to end of Section 1.*

*If Allied industry (e.g. veterinarian) is selected, then skip to do you currently own and/or manage production or processing in (Dem7).*

***Answer if: Swine Producer is selected***

Dem 2: How many pigs do you typically care for per day?

- 1-99
- 100-999
- 1000-2499 //
- 2500-4999
- 5000-9999
- 10,000 or more

***Answer if: Harvest (pork processing and/or packing) Please specify is selected***

Dem 2b: How many pigs does your facility process per day?

- 1-99
- 100-999
- 1000-2499
- 2500-4999
- 5000-9999
- 10,000 or more

***Answer If: What sector of the swine industry do you most identify yourself with? Harvest (pork processing and/or packing) Please specify: Is Not Selected***

Dem 3: How many pigs do you typically have on the site(s) under your ownership or management?  
Please select one of the following:

- 1-99
- 100-999
- 1000-2499
- 2500-4999
- 5000-9999
- 10,000 or more

***Answer If What sector of the swine industry do you most identify yourself with? Harvest (pork processing and/or packing) Please specify: Is Not Selected***

Dem 4: Are you a contract producer?

- Yes
- No
- Other (please comment) \_\_\_\_\_

***Answer If What sector of the swine industry do you most identify yourself with? Harvest (pork processing and/or packing) Please specify: Is Not Selected***

Dem 5: Which best describes this pig operation?

- Farrow-to-finish
- Wean-to-finish
- Breeding/Farrowing
- Nursery
- Finishing
- Boar Stud
- Gilt Developer Unit
- Other \_\_\_\_\_

***Answer If What sector of the swine industry do you most identify yourself with? Swine producer Is Selected Or What sector of the swine industry do you most identify yourself with? Allied industry (e.g. veterinarian, academia, government, feed company, pharmaceutical company, etc.) Please specify: Is Selected***

Dem 6: How many production sites do you currently own and/or manage? Please select one of the following:

- 1
- 2-5
- 6-10
- >10

***Answer If What sector of the swine industry do you most identify yourself with? Allied industry (e.g. veterinarian, academia, government, feed company, pharmaceutical company, etc.) Please specify: Is Not Selected***

Dem 7: Do you currently own and/or manage production or processing in:

- Single State
- Multiple States

***Answer If What sector of the swine industry do you most identify yourself with? Swine producer Is Selected***

Dem 7a: Is your involvement in the swine industry in:

- Single State
- Multiple States

***Answer If What sector of the swine industry do you most identify yourself with? Allied industry (e.g. veterinarian, academia, government, feed company, pharmaceutical company, etc.) </br> Please specify: Is Not Selected***

Dem 7\_1: Please check/select all the region(s) where you currently own or manage production or processing sites:

- Midwest (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin)
- Northern Plains (Colorado, Montana, Nebraska, North Dakota, South Dakota, Wyoming)
- Northeast (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia)
- Southeast (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia)
- Southern Plains (Kansas, Oklahoma, Texas)
- Pacific Northwest (Idaho, Oregon, Washington)
- Southwest (Arizona, California, Nevada, New Mexico, Utah)

***Answer If What sector of the swine industry do you most identify yourself with? Allied industry (e.g. veterinarian, academia, government, feed company, pharmaceutical company, etc.) </br> Please specify: Is Selected***

Dem 7\_1a: Please check/select all the region(s) where you are currently involved in the swine industry:

- Midwest (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin)
- Northern Plains (Colorado, Montana, Nebraska, North Dakota, South Dakota, Wyoming)
- Northeast (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia)
- Southeast (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia)
- Southern Plains (Kansas, Oklahoma, Texas)
- Pacific Northwest (Idaho, Oregon, Washington)
- Southwest (Arizona, California, Nevada, New Mexico, Utah)



***Answer If What sector of the swine industry do you most identify yourself with? Swine producer Is Selected***

Dem 8: How often (e.g. daily, weekly, monthly, every 6 months, etc.) do you move pigs off of a production site to another production site or to harvest? Please select one of the following:

- 3 or more times a week
- Twice weekly
- Weekly
- Every 2 to 4 weeks
- Every 2 months
- Every 3-6 months
- Less than every 6 months

***Answer If What sector of the swine industry do you identify yourself with? Swine producer Is Selected  
Or What sector of the swine industry do you identify yourself with? Allied industry (e.g. veterinarian,  
academia, government, feed company, pharmaceutical company, etc.). Please specify: Is Selected***

Dem 9: Do you have established biosecurity protocols for live animal site(s) or site visits?

- Yes
- No
- Don't know

## **Section 2: Disease Risk**

Please rate the following pork production chain movements for the risk of FMD spread using the scale provided below. Assume that all movements that occur are in accordance with your company's current biosecurity requirements and protocols, if they exist.

### **Production equipment and feed:**

Specific Movement	No or slight risk of disease spread	Low risk of disease spread	Some risk of disease spread	High risk of disease spread
1. Movement of feed onto production sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Movement of supplies onto production sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Movement of shared equipment onto production sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Movement of contracted or shared livestock trucks onto production sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Movement of dedicated livestock trucks among company production sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Production genetics:**

Specific Movement	No or slight risk of disease spread	Low risk of disease spread	Some risk of disease spread	High risk of disease spread
1. Movement of replacement gilts and boars into production system isolation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Movement of replacement gilts and boars onto production site	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Movement of semen into a production system (breeding herd)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Production general:**

Specific Movement	No or slight risk of disease spread	Low risk of disease spread	Some risk of disease spread	High risk of disease spread
1. Movement of weaned pigs to offsite nursery, wean to finish, or finishing (single source)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Movement of weaned pigs to offsite nursery, wean to finish, or finishing (multiple sources)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Movement of replacement gilts into a sow unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Movement of feeder pigs to finishing (e.g. from nursery to finishing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Movement of finishing pigs direct to slaughter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Movement of cull sows and boars direct to slaughter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Movement of off size and cull pigs, sows and boars to sale barn/buying station	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Movement of off size and cull pigs, sows and boars from sale barn/buying station to slaughter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Movement of feeder pigs from sale barn to production site	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Movement of dead stock to offsite disposal (landfill, rendering, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Movement of manure to field application offsite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Harvest and processing:

Specific Movement	No or slight risk of disease spread	Low risk of disease spread	Some risk of disease spread	High risk of disease spread
1. Movement of fresh carcasses to offsite processing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Movement of raw inedibles (byproducts) from harvest site to further processing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Movement of rendered inedibles from harvest site to further processing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Movement of finished products to distributing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Movement of fresh products to point of service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Movement of ready to eat products to point of service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Personnel:

Specific Movement	No or slight risk of disease spread	Low risk of disease spread	Some risk of disease spread	High risk of disease spread
1. Movement of employees onto, off and/or between production site(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Movement of routine service providers (e.g. plumbers, electricians, etc.) onto, off and/or between sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Movement of veterinarians onto, off and/or between sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Movement of vaccination crews into, off and/or between sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Movement of commercial crews onto, off and/or between sites (e.g. manure haulers, feed trucks)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Section 3: Impact on Business

In the event of a Foot and Mouth Disease (FMD) outbreak in the US, restrictions may be enforced on particular movements within the pork supply chain. The goal of this exercise is to determine which movements within the industry are most critical to the continuation of business. This will help emergency response teams to prioritize efforts so that movements most vital to the industry are interrupted as little as possible. For each movement below, move the slider to indicate the time at which the restriction of that particular movement would cause significant negative consequences to your business (e.g., high likelihood of bankruptcy, negative impact on animal welfare, disruption of movement of people onto or off site, etc.). Assume for each scenario you are expecting the movement to occur tomorrow.

[Slider scale for each question – data in continuous format 1-4, but participants only saw labels]

<48 hours      7 days      21 days      > 60 days

|-----|-----|-----|

#### Production equipment and feed:

- \_\_\_\_\_ Movement of feed onto production sites
- \_\_\_\_\_ Movement of supplies onto production sites
- \_\_\_\_\_ Movement of shared equipment onto production sites
- \_\_\_\_\_ Movement of contracted or shared livestock trucks onto production sites
- \_\_\_\_\_ Movement of dedicated livestock trucks among company production sites

#### Production genetics:

- \_\_\_\_\_ Movement of replacement gilts and boars into production system isolation
- \_\_\_\_\_ Movement of replacement gilts and boars onto production site
- \_\_\_\_\_ Movement of semen into a production system (breeding herd)

**Production general:**

- \_\_\_\_\_ Movement of weaned pigs to offsite nursery, wean to finish, or finishing (single source)
- \_\_\_\_\_ Movement of weaned pigs to offsite nursery, wean to finish, or finishing (multiple sources)
- \_\_\_\_\_ Movement of replacement gilts into a sow unit
- \_\_\_\_\_ Movement of feeder pigs to finishing (e.g. from nursery to finishing)
- \_\_\_\_\_ Movement of finishing pigs direct to slaughter
- \_\_\_\_\_ Movement of cull sows and boars direct to slaughter
- \_\_\_\_\_ Movement of off size and cull pigs, sows and boars to sale barn/buying station
- \_\_\_\_\_ Movement of off size and cull pigs, sows and boars from sale barn/buying station to slaughter
- \_\_\_\_\_ Movement of feeder pigs from sale barn to production site
- \_\_\_\_\_ Movement of dead stock to offsite disposal (landfill, rendering, etc.)
- \_\_\_\_\_ Movement of manure to field application offsite

**Harvest and processing:**

- \_\_\_\_\_ Movement of fresh carcasses to offsite processing
- \_\_\_\_\_ Movement of raw inedibles (byproducts) from harvest site to further processing
- \_\_\_\_\_ Movement of rendered inedibles from harvest site to further processing
- \_\_\_\_\_ Movement of finished products to distributing
- \_\_\_\_\_ Movement of fresh products to point of service
- \_\_\_\_\_ Movement of ready to eat products to point of service

**Personnel:**

- \_\_\_\_\_ Movement of employees onto, off and/or between production site(s)
- \_\_\_\_\_ Movement of routine service providers (e.g. plumbers, electricians, etc.) onto, off and/or between sites
- \_\_\_\_\_ Movement of veterinarians onto, off and/or between sites
- \_\_\_\_\_ Movement of vaccination crews into, off and/or between sites
- \_\_\_\_\_ Movement of commercial crews onto, off and/or between sites (e.g. manure haulers, feed trucks, livestock haulers)