African Swine Fever (ASF)
Soybean Meal Supply Chain Workshop

Hosted by University of Minnesota and the Swine Health Information Center

July 10, 2019

UNIVERSITY OF MINNESOTA
Driven to Discover®

Polly L. Sullivan, Facilitator, Ready Inc.

Welcome!

Agenda

- 9:00-10:30
  - Session Kickoff
  - ASF Background and Threat Status: Dr. Paul Sundberg
- *Break*
- 10:45-Noon
  - Canada's Approach to ASF Control: Melissa Dumont, Animal Nutrition Association of Canada
  - U.S. Soy Supply Chain Overview: United Soybean Board/USSEC Representatives
- *Lunch Served*
- 12:30-2:45
  - Breakout Group Discussion/Short Break/Group Reports
- 2:45-4:00
  - Key Messages, Consensus, Next Steps
- *Adjourn*

Dr. Jerry Shurson, Swine Nutrition, University of Minnesota

Session Kickoff

Why Are We Here?

- ASF is endemic in China, continues to spread to other countries, and is a significant threat to U.S. agriculture
- ASF has caused major changes in global trade and supply and demand for soybean meal and pork
- Feed ingredients, including soybean meal, have been identified as potential risk factors for ASF transmission
- Many questions, perceptions, and misinformation exist about the risk of ASF introduction from various feed ingredients
- If ASF enters the U.S., it will have devastating effects on:
  - Economy
  - Soybean meal use, markets, and exports
  - Domestic pork supply and prices
  - Inability to export pork

What you told us about …

Your Motivation to Participate

- Learn
  - Risk of ASF and FAD introduction through various feed ingredient supply chains
  - Risk of ASF in imported organic soy from China
- Strategies to prevent ASF introduction in North America are needed
  - Must have alignment between U.S. and Canada
  - Develop strategic partnerships and procedures for U.S. soy response to ASF
  - Critical for maintaining U.S. soybean meal demand
  - Identify science-based, practical, and effective risk mitigation and biosecurity procedures that won't be detrimental to commerce

What you told us about …

Expected Outcomes and Action Items

- Identify potential risk factors for ASF introduction from the soy supply chain
- Develop action plans for prevention, mitigation, and reducing ASF spread if introduced into North America
  - Identify critical control points in feed production, distribution, and storage to minimize risk of transmission
- Develop a clear, concise, practical biosecurity plan for imported soy products
  - Develop an action plan for prevention and mitigation
- Identify knowledge gaps
  - Develop industry research collaborations to obtain needed information
- Identify action items needed for developing diagnostic assays capable of detecting virus in large volumes of feed ingredients
- Develop educational materials and communicate a consistent message to the pork industry and veterinarians

What you told us about …

Your Reservations and Concerns

- Most had none
- Open and transparent communication and don’t violate anti-trust
- Is this issue too big to address?
- If new government regulatory requirements are desired, unintended and negative consequences must be considered

What Do We Want to Accomplish Today?

- Begin a conversation and gather information
  - All aspects of the soy supply chain, with special interest on imported soy products
- Identify education and research needs focused on:
  - Prevention
  - Mitigation
  - Product differentiation
  - Diagnostic assays for feed ingredients
- Develop an action plan, funding sources, and collaborative efforts
  - Address education and research needs

Polly L. Sullivan

Facilitation Briefing and Introductions

Objectives

- Identify and discuss the various segments and potential risk factors of the soy supply chain in North America
- Identify and discuss potential prevention, mitigation, and product differentiation (country of origin) strategies for soy products used in the U.S. pork industry
- Identify research and education needs related to foreign animal viruses and soy products

Tools for Productive Conversations

READY inc.
Crisis Readiness for Growing Businesses

Listen & Note

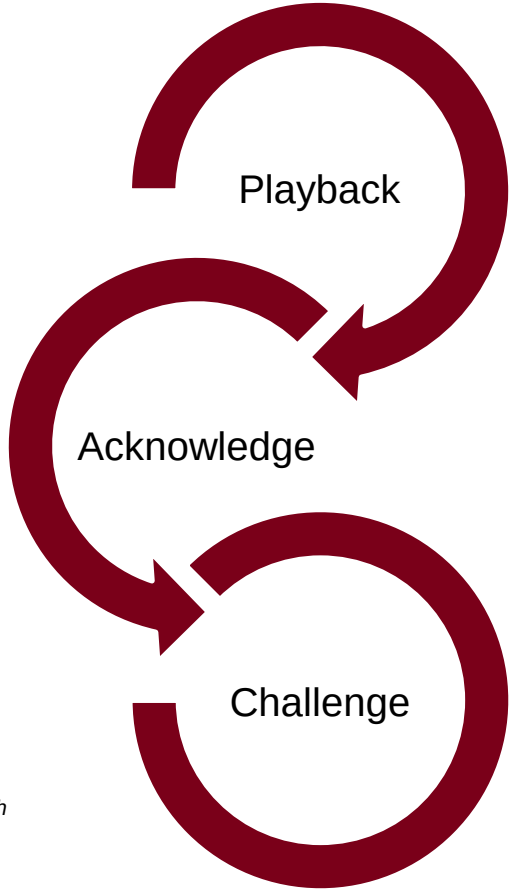
Parking Lot

Pause to Summarize

“PAC”

What is PAC?

- Playback
  - “What I hear you saying is …”
  - “Let me restate to make sure I understand …”
- Acknowledge
  - “I agree that …”
  - “You’re right, it’s important to …”
- Challenge
  - “What about …?”
  - “Have you considered …”
  - “How would we address …”



Source: The Secrets of Facilitation: The S.M.A.R.T. Guide to Getting Results with Groups by Michael Wilkinson

Introductions

- Your name, title and organization/company
- Your organization or company’s role in the soybean, feed or pork supply chain

Dr. Paul Sundberg, Swine Health Information Center

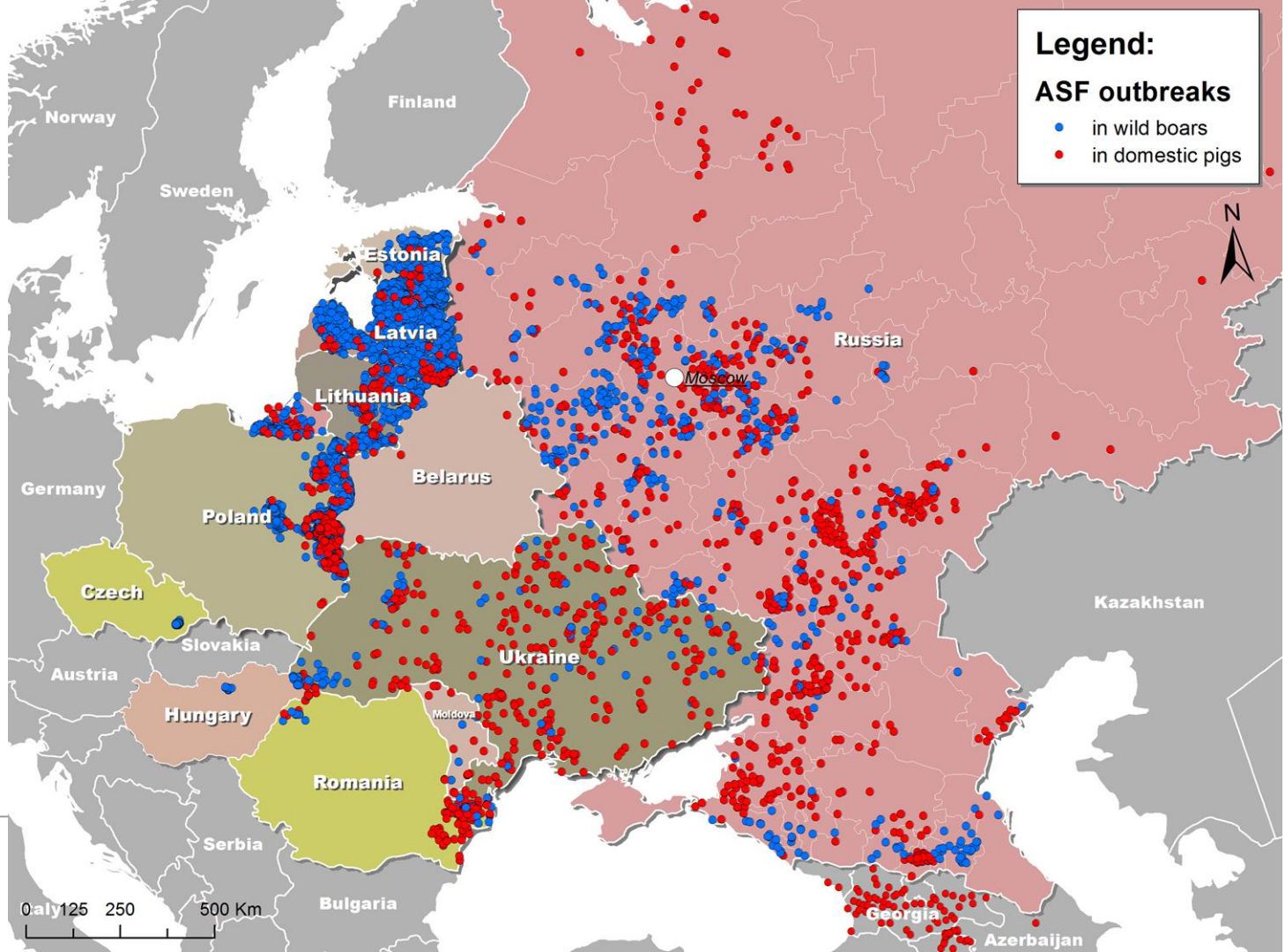
ASF Background and Threat Status

Swine Health Information Center

African Swine Fever (ASF)
Soybean Meal Supply Chain Workshop

Paul Sundberg, DVM, PhD, DACVPM
Swine Health Information Center
psundberg@swinehealth.org

- Wild boar: Poland, Ukraine, Romania
- Domestic: Ukraine, Romania
- Rise of incidence in domestic pigs



Keeping an eye on it . . .

Official Reports

- As of Feb. 27th, there are 116 officially reported ASF cases in China.
- As of Jan. 27th, MARA has lifted bans in 92 ASF epidemic areas.
- 900,000 pigs culled
- Five ‘zones’ for control, cleanup and marketing

Keeping an eye on it . . .

February 2019

China Swine Association
Zhengzhou City of He Nan Province

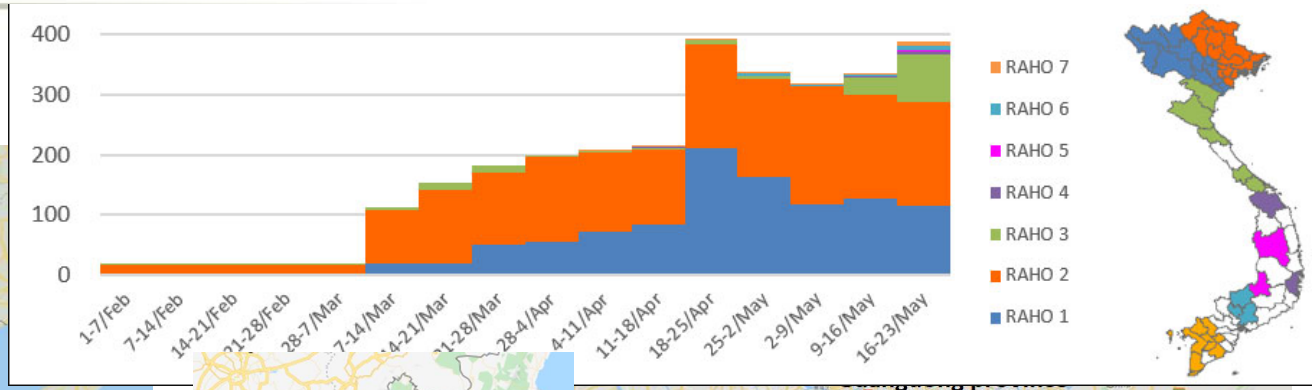
Message from the conference:

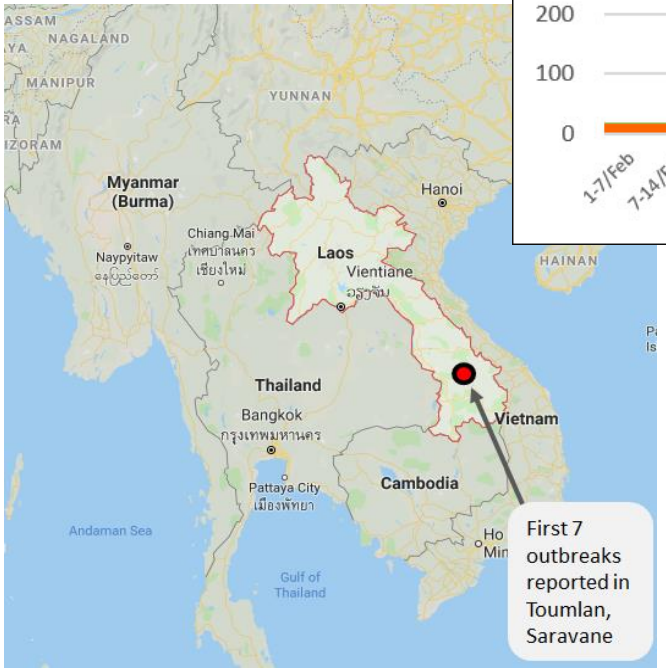
- **There is an estimation of loss 30%-35% of pigs in this country, means 200M-300M units of pigs**
- **It is estimated up to 60% losses in some provinces like Shandong, Henan**

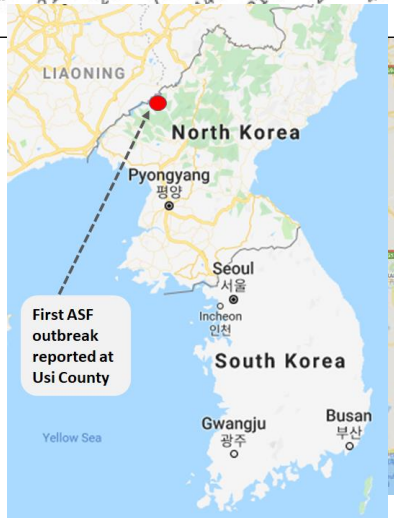
July 2019

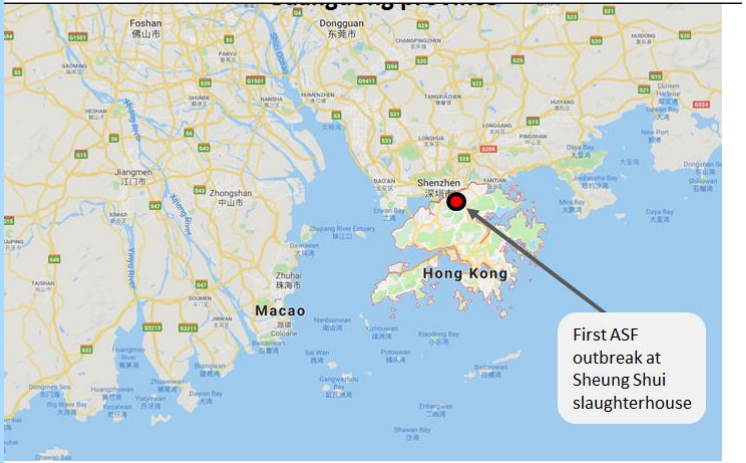
30% - 85% loss in breeding herds per province

ASF in Southeast Asia









Food and Ag Policy Research Institute – ASF in the US

First year of outbreak in the United States revenue loss by commodity would be

- $8 billion for pork
  - pork sector = $20B to US economy (USDA 2017)
- $3 billion for beef
- $4 billion for corn
- $1.5 billion for soybeans

Hayes D, Fabiosa J, Elobeid A, Carriquiry M. 2011. "Economy Wide Impacts of a Foreign Animal Disease in the United States." Working Paper 11-WP 525

2019 Pork Industry Forum – NPPC - NPB

- **Monitoring of disease threats** and ongoing review of swine disease control efforts to determine their effectiveness.
- **Ongoing dialogue** with Canadian and Mexican government, swine and health organizations to collaborate and implement practices that would protect the North America Swine Herd from entry of a Foreign Animal Disease.
- **Restrict imports of soy-based animal feed products** from countries of high risk to transmit FAD
- **Adopt a responsible feed ingredient sourcing strategy** for all imported products to prevent the introduction of FADs into the US.

2019 Pork Industry Forum – NPPC - NPB

- Evaluate swine FAD virus viability in pig feed or feedstuffs and develop feed holding time information as it relates to transport and storage to assist in disease prevention.
- Develop a science based plan to safely introduce essential feed and feed ingredients, as well as other products, from countries of high risk
- Focus communication, education, funding and research activities by all NPB staff, committees of the NPB, governmental agencies, other industry organizations, all vendors to the USA swine industry and all producers to keep the US national swine herd free of all FADs including and especially targeting ASF.

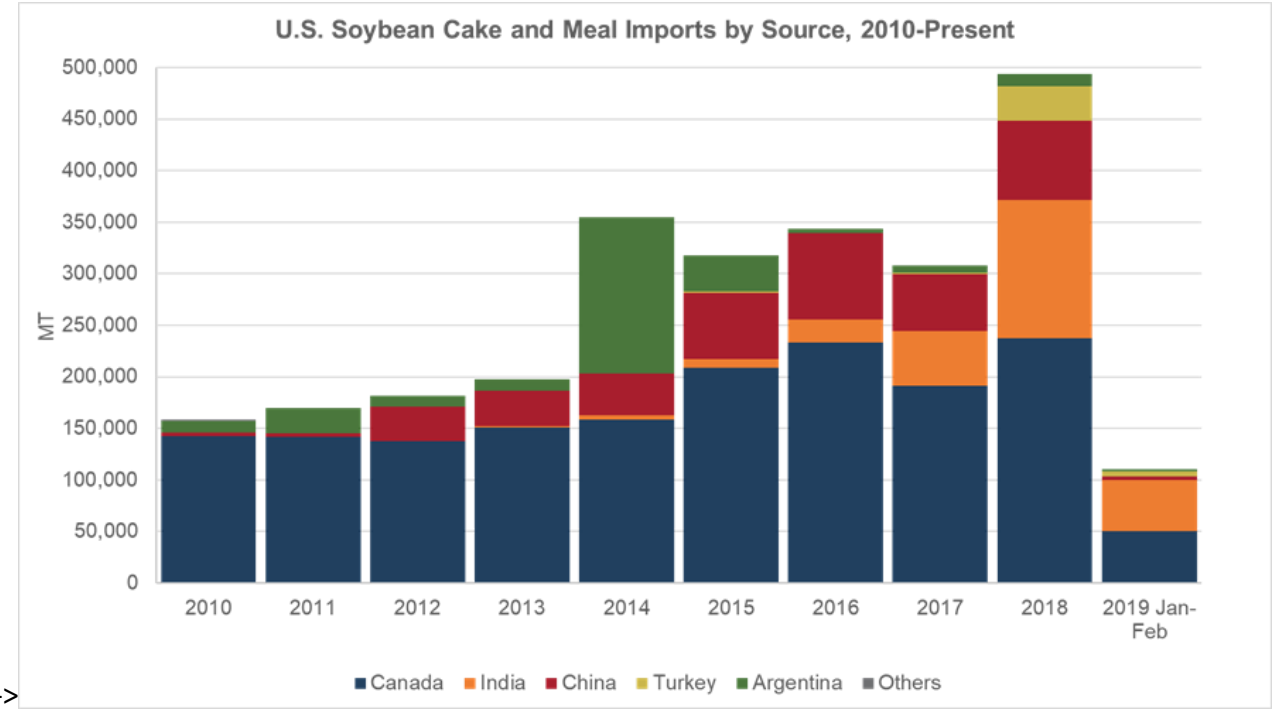
Swine Health Information Center

What about feed?

Soybean meal imports?

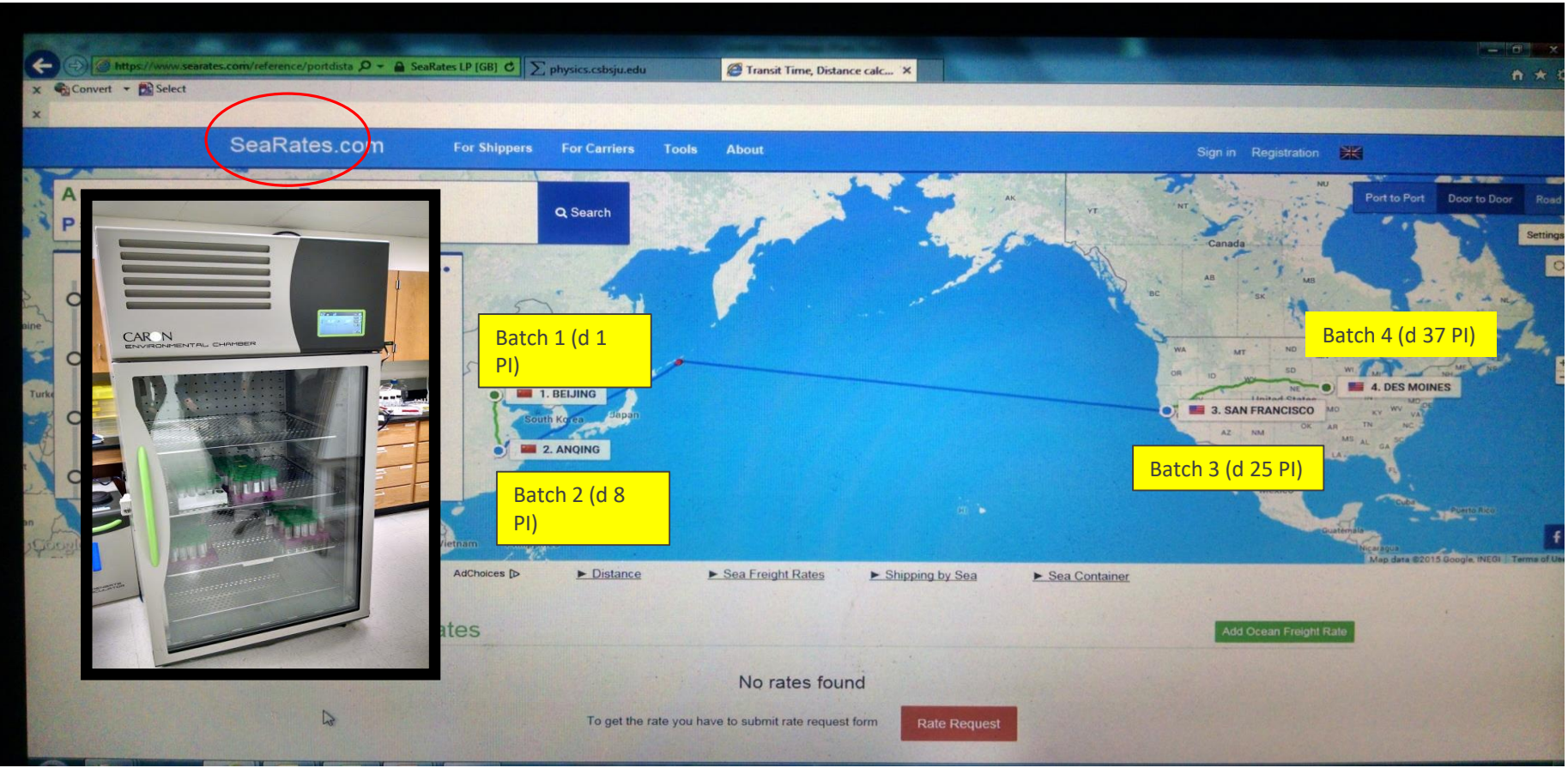
23 Ports of Entry since 2016

- 82% from 4 ports
  - San Francisco
  - Baltimore
  - Seattle
  - New Orleans

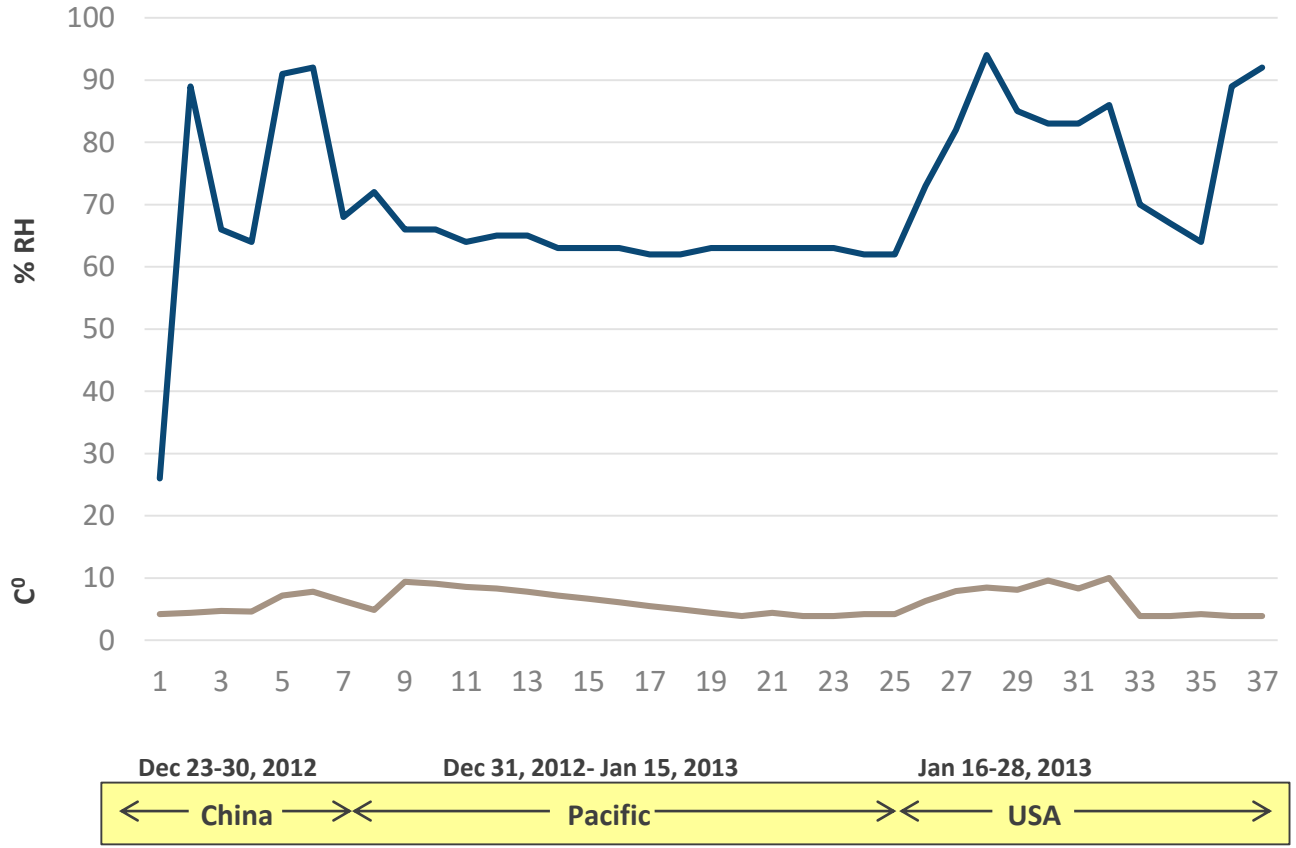


Source: NPPC ->

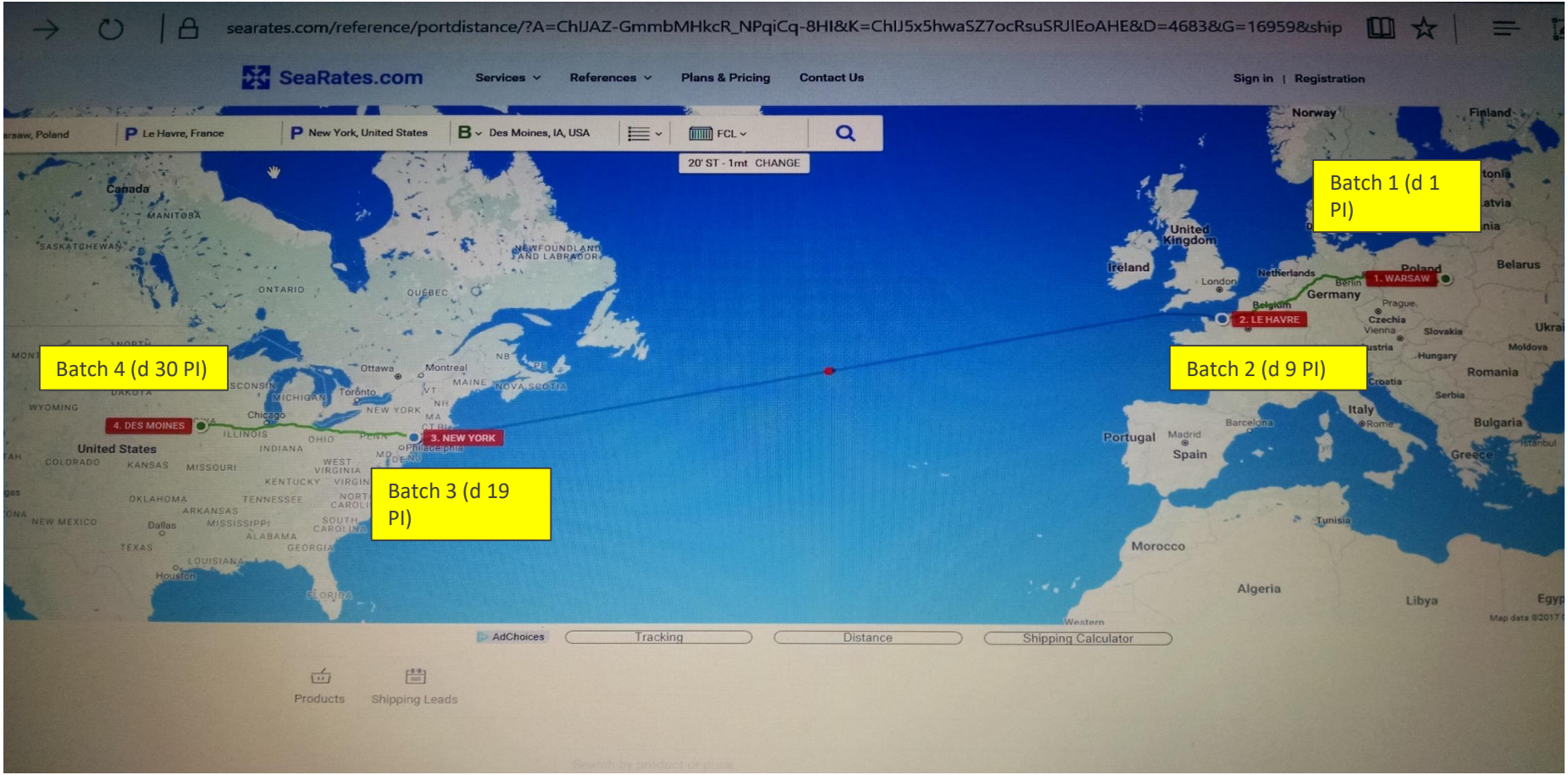
Feed or feed components??



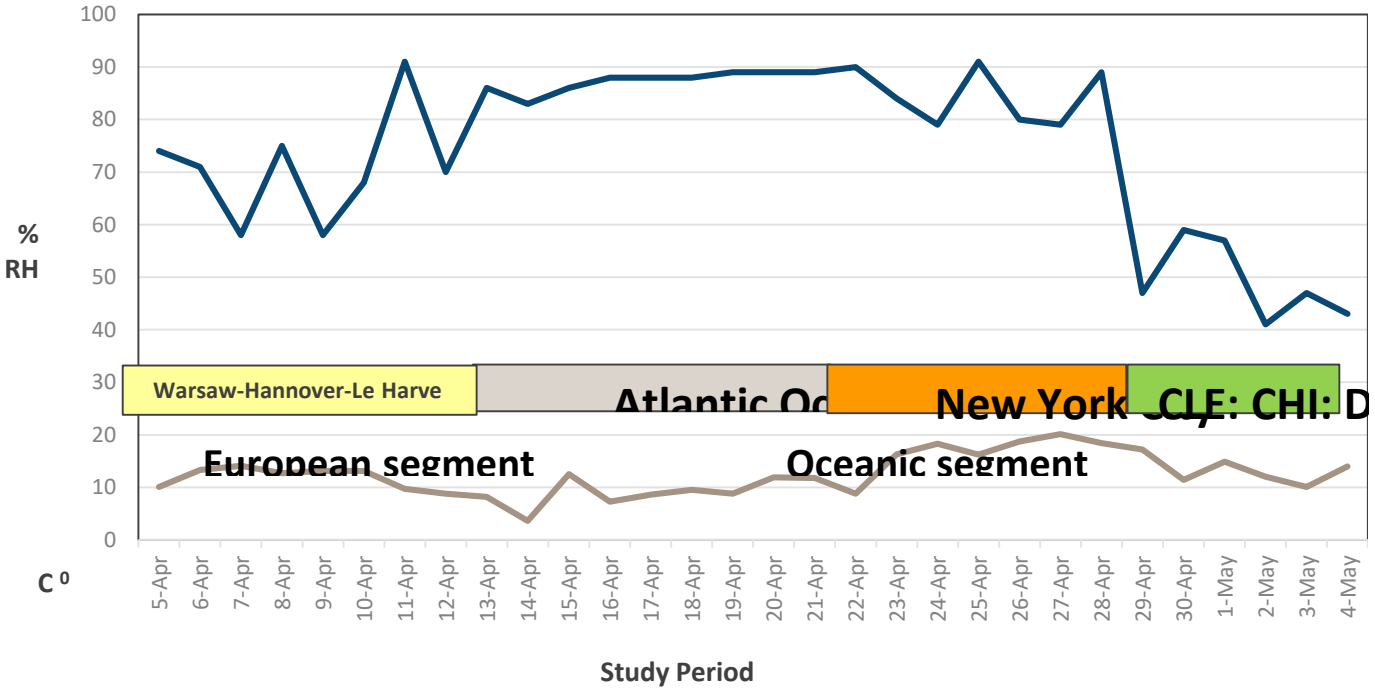
Mean daily temperature & % RH data utilized during the Trans-Pacific model



ASFV: Relationship of Trans-Atlantic route and sampling points



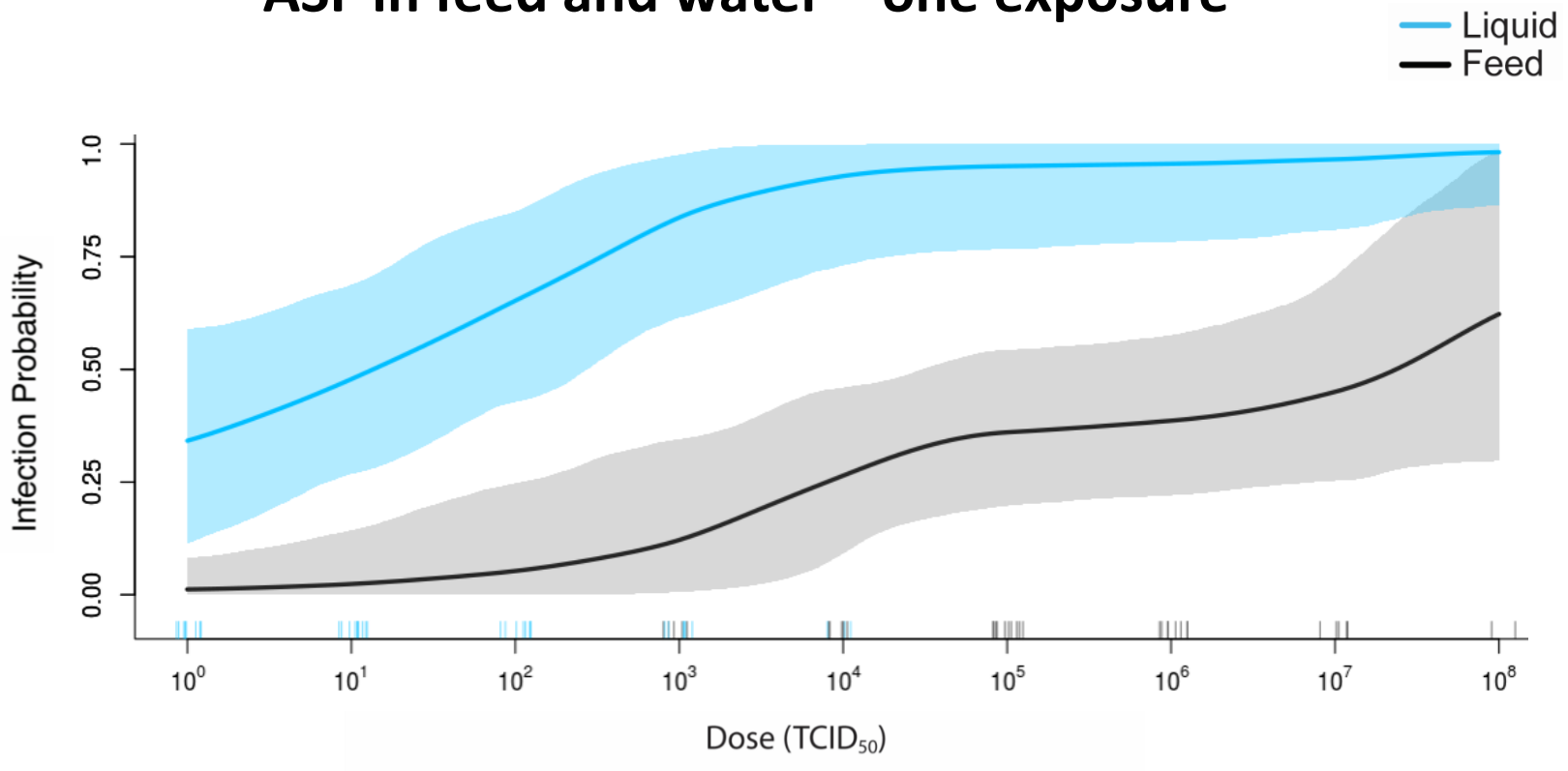
Mean daily temperature & % RH



Results: Summary of virus survival across both models (37 DPI or 30 DPI)

Ingredient	SVA (FMDV)	ASFV	PSV (SVDV)	PEDV	FCV (VESV)	PCV2	BHV-1 (PRV)	PRRSV 174	BVDV (CSFV)	VSV	CDV (NiV)	IAV-S
Soybean meal-Conventional	(+)	(+)	(+)	(+)	(+)	(-)	(+)	(+)	(-)	(-)	(-)	(-)
Soybean meal-Organic	(-)	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Soy oil cake	(+)	(+)	(+)	NT	(-)	(-)	(+)	(-)	(-)	(-)	(-)	(-)
DDGS	(+)	(-)	(-)	NT	(-)	(-)	(-)	(+)	(-)	(-)	(-)	(-)
Lysine	(+)	(-)	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)
Choline	(+)	(+)	(-)	(+)	(-)	(+)	(-)	(-)	(-)	(-)	(-)	(-)
Vitamin D	(+)	(-)	(+)	(+)	(-)	(+)	(-)	(-)	(-)	(-)	(-)	(-)
Moist cat food	(+)	(+)	(+)	NT	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Moist dog food	(+)	(+)	(+)	NT	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Dry dog food	(+)	(+)	(+)	NT	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Pork sausage casings	(+)	(+)	(+)	NT	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Complete feed (+ control)	(+)	(+)	(+)	NT	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)
Complete feed (- control)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Stock virus control	(-)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)

ASF in feed and water – one exposure



Niederwerder et al., 2019. *Emerging Infectious Diseases.*

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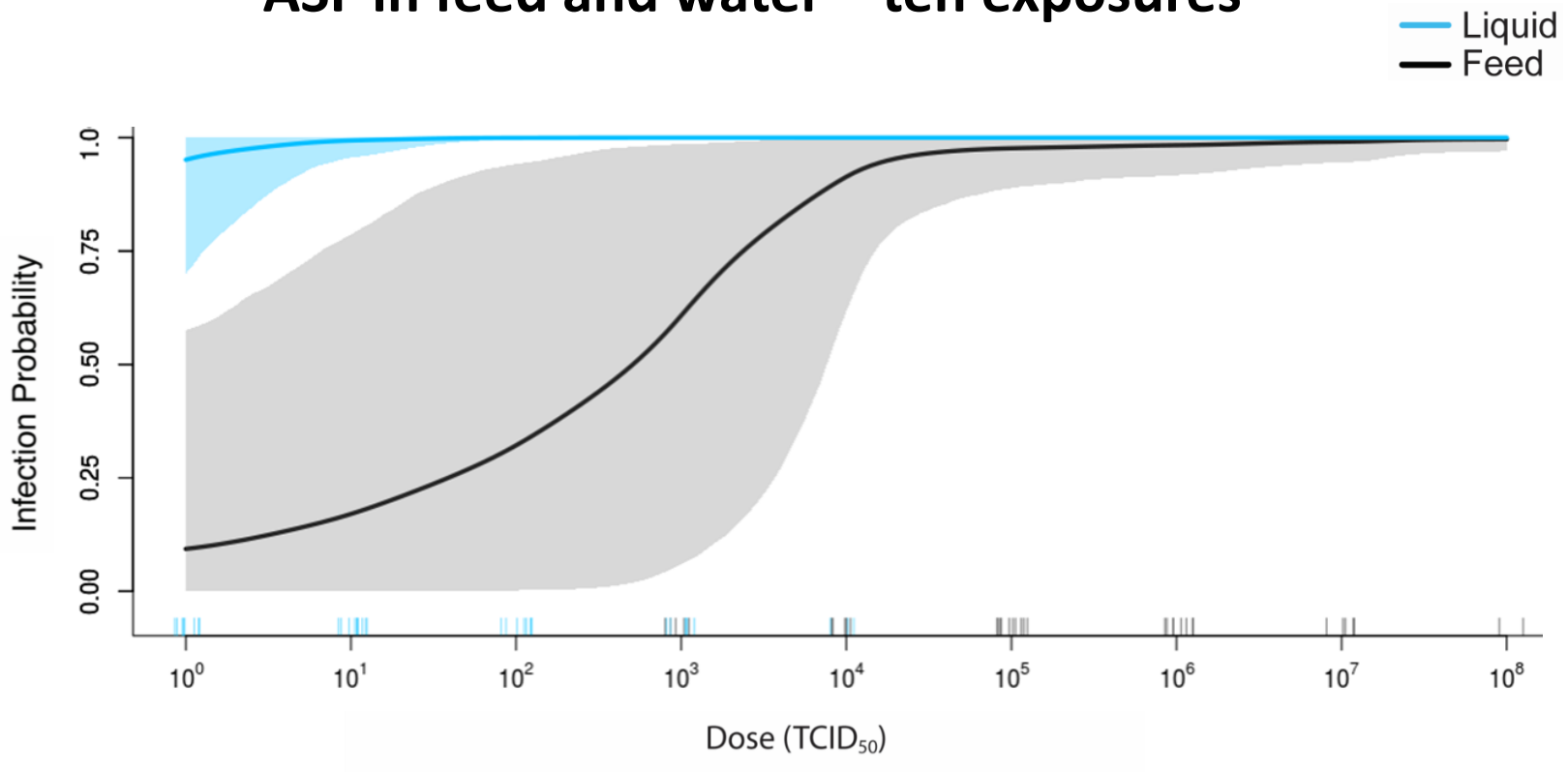
ASF in feed and water – ten exposures



Niederwerder et al., 2019. *Emerging Infectious Diseases.*

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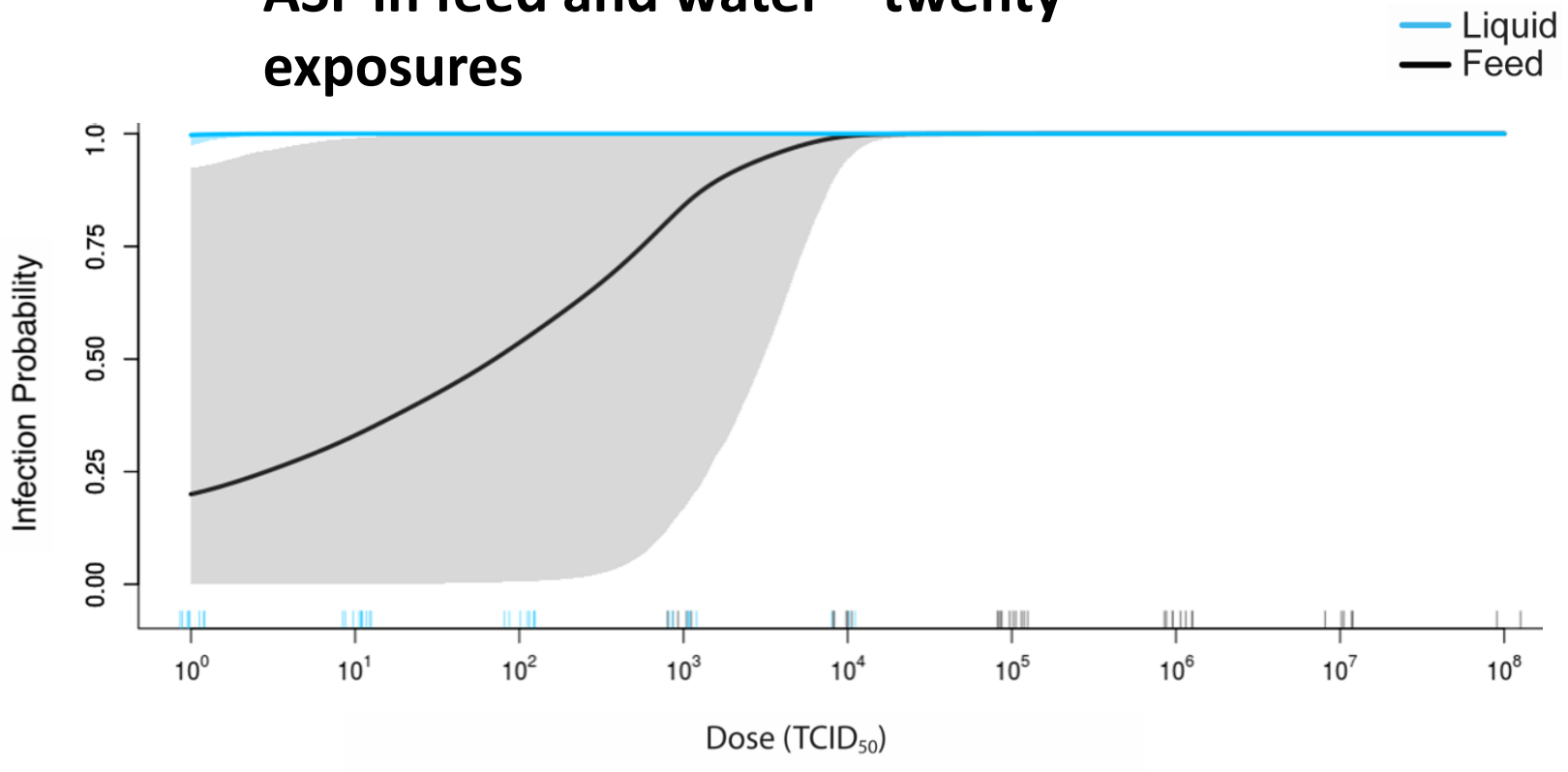
ASF in feed and water – twenty exposures



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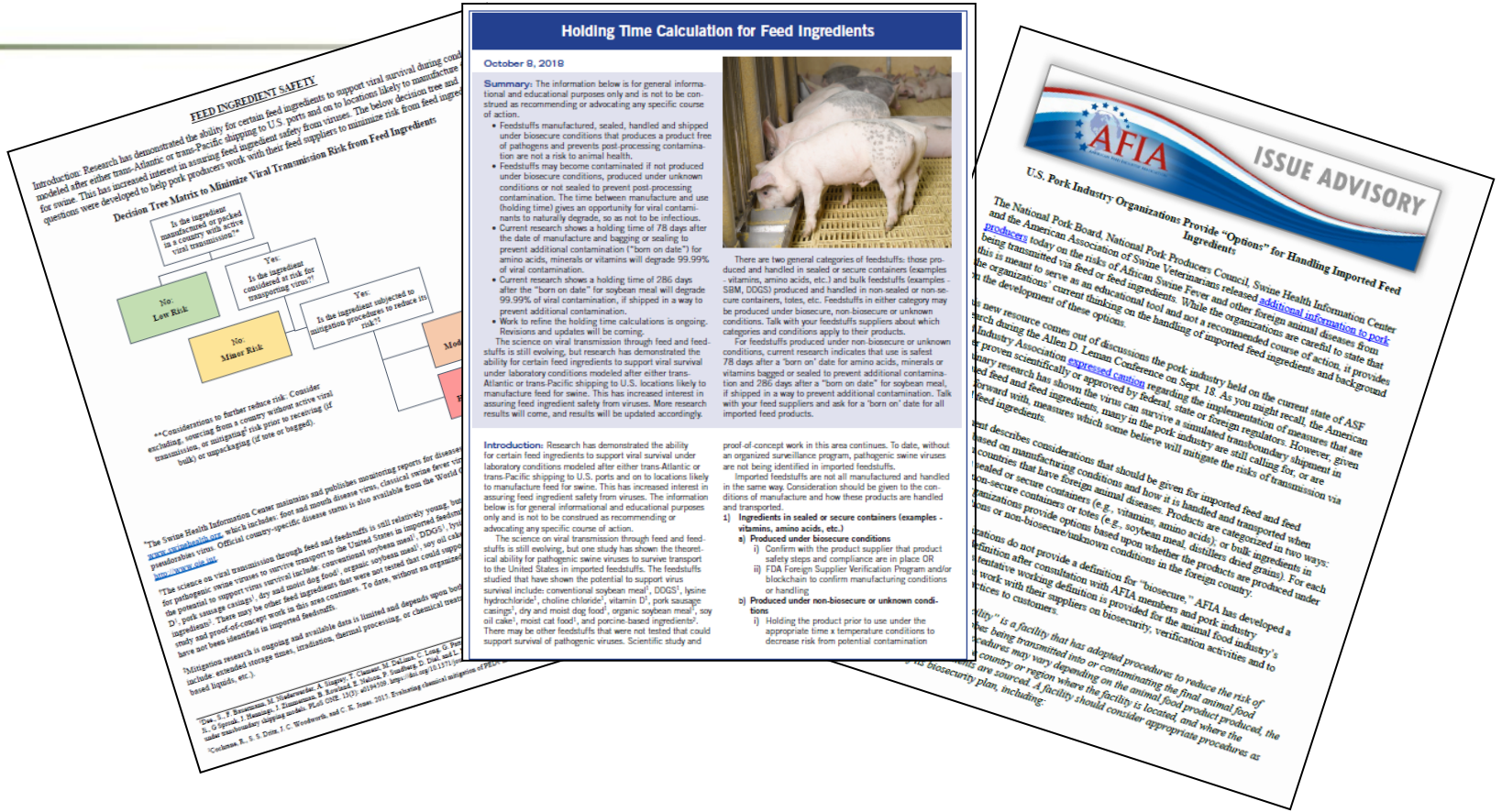


FEED INGREDIENT SAFETY

Introduction: Research has demonstrated the ability for certain feed ingredients to support viral survival during conditions modeled after either trans-Atlantic or trans-Pacific shipping to U.S. ports and on to locations likely to manufacture feed for swine. This has increased interest in assuring feed ingredient safety from viruses. The below decision tree and questions were developed to help pork producers work with their feed suppliers to minimize risk from feed ingredients.

Decision Tree Matrix to Minimize Viral Transmission Risk from Feed Ingredients

Holding Time Calculation for Feed Ingredients

October 9, 2018

Summary: The information below is for general informational and educational purposes only and is not to be construed as recommending or advocating any specific course of action.

- Feedstuffs manufactured, sealed, handled and shipped under biosecure conditions that produces a product free of pathogens and prevents post-processing contamination are not a risk to animal health.
- Feedstuffs may become contaminated if not produced under biosecure conditions, produced under unknown conditions or not sealed to prevent post-processing contamination. The time between manufacture and use (holding time) gives an opportunity for viral contaminants to naturally degrade, so as not to be infectious.
- Current research shows a holding time of 78 days after the date of manufacture and bagging or sealing to prevent additional contamination ("born on date") for amino acids, minerals or vitamins will degrade 99.99% of viral contamination.
- Current research shows a holding time of 286 days after the "born on date" for soybean meal will degrade 99.99% of viral contamination, if shipped in a way to prevent additional contamination.
- Work to refine the holding time calculations is ongoing. Revisions and updates will be coming.

The science on viral transmission through feed and feedstuffs is still evolving, but research has demonstrated the ability for certain feed ingredients to support viral survival under laboratory conditions modeled after either trans-Atlantic or trans-Pacific shipping to U.S. locations likely to manufacture feed for swine. This has increased interest in assuring feed ingredient safety from viruses. More research results will come, and results will be updated accordingly.

There are two general categories of feedstuffs: those produced and handled in sealed or secure containers (examples - vitamins, amino acids, etc.) and bulk feedstuffs (examples - SBM, DDGS) produced and handled in non-sealed or non-secure containers, totes, etc. Feedstuffs in either category may be produced under biosecure, non-biosecure or unknown conditions. Talk with your feedstuffs suppliers about which categories and conditions apply to their products.

For feedstuffs produced under non-biosecure or unknown conditions, current research indicates that use is safest 78 days after a "born on" date for amino acids, minerals or vitamins bagged or sealed to prevent additional contamination and 286 days after a "born on date" for soybean meal, if shipped in a way to prevent additional contamination. Talk with your feed suppliers and ask for a 'born on' date for all imported feed products.

Introduction: Research has demonstrated the ability for certain feed ingredients to support viral survival under laboratory conditions modeled after either trans-Atlantic or trans-Pacific shipping to U.S. ports and on to locations likely to manufacture feed for swine. This has increased interest in assuring feed ingredient safety from viruses. The information below is for general informational and educational purposes only and is not to be construed as recommending or advocating any specific course of action.

The science on viral transmission through feed and feedstuffs is still evolving, but one study has shown the theoretical ability for pathogenic swine viruses to survive transport to the United States in imported feedstuffs. The feedstuffs studied that have shown the potential to support virus survival include: conventional soybean meal[1], DDGS[1], lysine hydrochloride[1], choline chloride[1], vitamin D[1], pork sausage casings[1], dry and moist dog food[1], organic soybean meal[1], soy oil cake[1], moist cat food[1], and porcine-based ingredients[2]. There may be other feedstuffs that were not tested that could support survival of pathogenic viruses. Scientific study and proof-of-concept work in this area continues. To date, without an organized surveillance program, pathogenic swine viruses are not being identified in imported feedstuffs.

Imported feedstuffs are not all manufactured and handled in the same way. Consideration should be given to the conditions of manufacture and how these products are handled and transported.

1) **Ingredients in sealed or secure containers (examples - vitamins, amino acids, etc.)**
   a) **Produced under biosecure conditions**
      i) Confirm with the product supplier that product safety steps and compliance are in place OR
      ii) FDA Foreign Supplier Verification Program and/or blockchain to confirm manufacturing conditions or handling
   b) **Produced under non-biosecure or unknown conditions**
      i) Holding the product prior to use under the appropriate time x temperature conditions to decrease risk from potential contamination

AFIA ISSUE ADVISORY

U.S. Pork Industry Organizations Provide "Options" for Handling Imported Feed Ingredients

The National Pork Board, National Pork Producers Council, Swine Health Information Center and the American Association of Swine Veterinarians released additional information to pork producers today on the risks of African Swine Fever and other foreign animal diseases from being transmitted via feed or feed ingredients. While the organizations are careful to state that this is meant to serve as an educational tool and not a recommended course of action, it provides the organizations' current thinking on the handling of imported feed ingredients and background on the development of these options.

A new resource comes out of discussions the pork industry held on the current state of ASF research during the Allen D. Leman Conference on Sept. 18. As you might recall, the American Industry Association expressed caution regarding the implementation of measures that are not proven scientifically or approved by federal, state or foreign regulators. However, given many research has shown the virus can survive a simulated transboundary shipment in feed and feed ingredients, many in the pork industry are still calling for, or are moving forward with, measures which some believe will mitigate the risks of transmission via feed ingredients.

The document describes considerations that should be given for imported feed and feed ingredients based on manufacturing conditions and how it is handled and transported when coming from countries that have foreign animal diseases. Products are categorized in two ways: sealed or secure containers (e.g., vitamins, amino acids); or bulk ingredients in non-secure containers or totes (e.g., soybean meal, distillers dried grains). For each of these categories, organizations provide options based upon whether the products are produced under biosecure or non-biosecure/unknown conditions in the foreign country.

The organizations do not provide a definition for "biosecure." AFIA has developed a definition after consultation with AFIA members and pork industry's tentative working definition is provided for the annual food industry's work with their suppliers on biosecurity; verification activities and to choices to customers.

"Biosecurity" is a facility that has adopted procedures to reduce the risk of disease being transmitted into or contaminating the final animal food product produced, the procedures may vary depending on the animal food product produced, the country or region where the facility is located, and where the ingredients are sourced. A facility should consider appropriate procedures as part of its biosecurity plan, including:

Swine Health Information Center

global disease monitoring, targeted research investments and analysis of swine health data

Feed Risk Task Force – June 11

Task Force Objective:

There is agreement that there is risk of introduction of pathogens into and within the U.S. via imported feed products. The Task Force will evaluate the risk and help decide what actions need to be taken to protect the U.S. pork industry from that risk. Actions should be achievable, based on science and minimize trade disruptions.

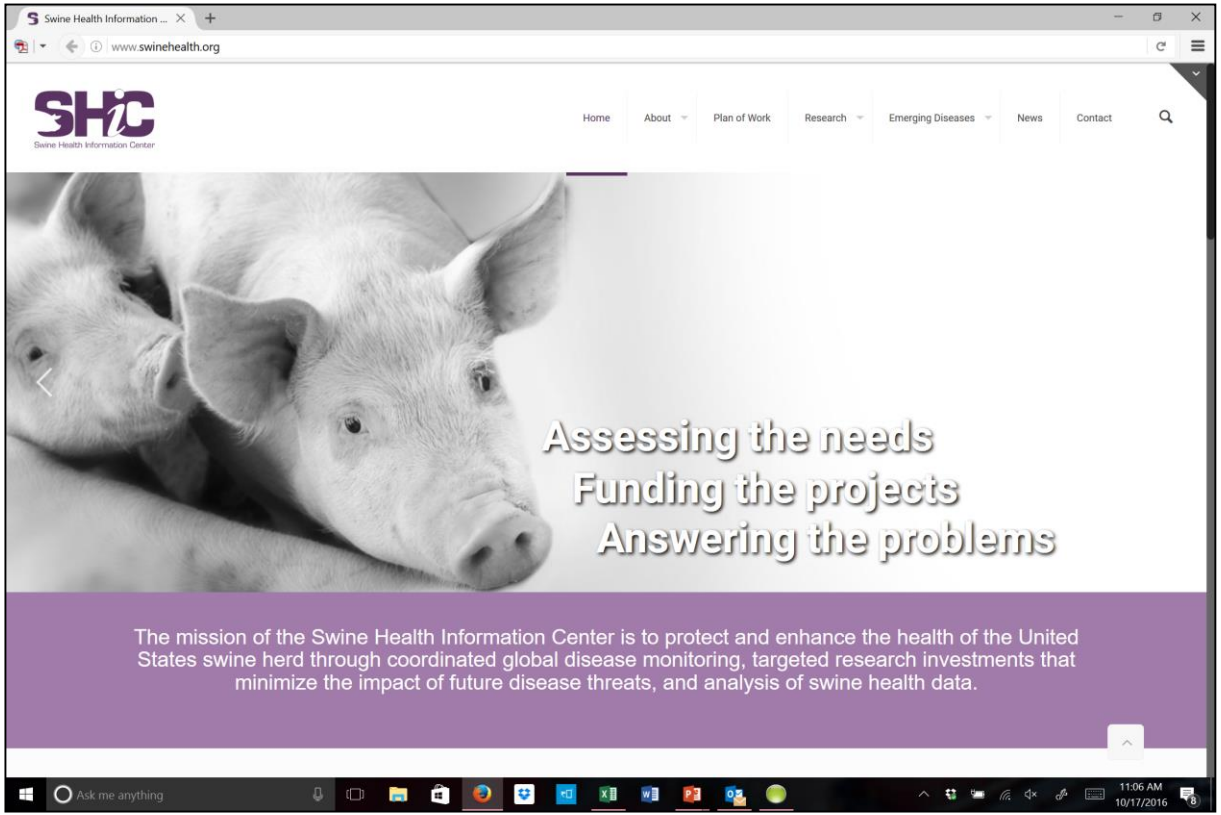
- Pork producers, associations, feed-related researchers
- 14 people from USG: FDA and APHIS VS, PPQ, PPD; ARS FADDL
- AFIA, NGFA, US poultry, NMPF, NCBA

Feed Risk Task Force – June 11

The identification of gaps in knowledge and subsequent research needs included:

- development of diagnostic testing capability for feed/ingredients,
- development of a response plan that will support feed/ingredient monitoring for FAD contamination
- performing a risk assessment for potential spread of a disease once identified within the US,
- development of a plan to assess and mitigate contamination within the feed system once the virus is identified within the US
- evaluation of the regulatory needs and feasibility of potential regulatory actions for feed importation, and
- development and evaluation of efficacy of mitigations for feed contamination.

www.swinehealth.org



SHIC
Swine Health Information Center

global disease monitoring, targeted research investments and analysis of swine health data

ASF-Soybean Meal Supply Chain Workshop

BREAK

Pathogen Detection & Surveillance

Dr Declan Schroeder, Molecular Virology, Department of Veterinary Medicine

June 24th 2019

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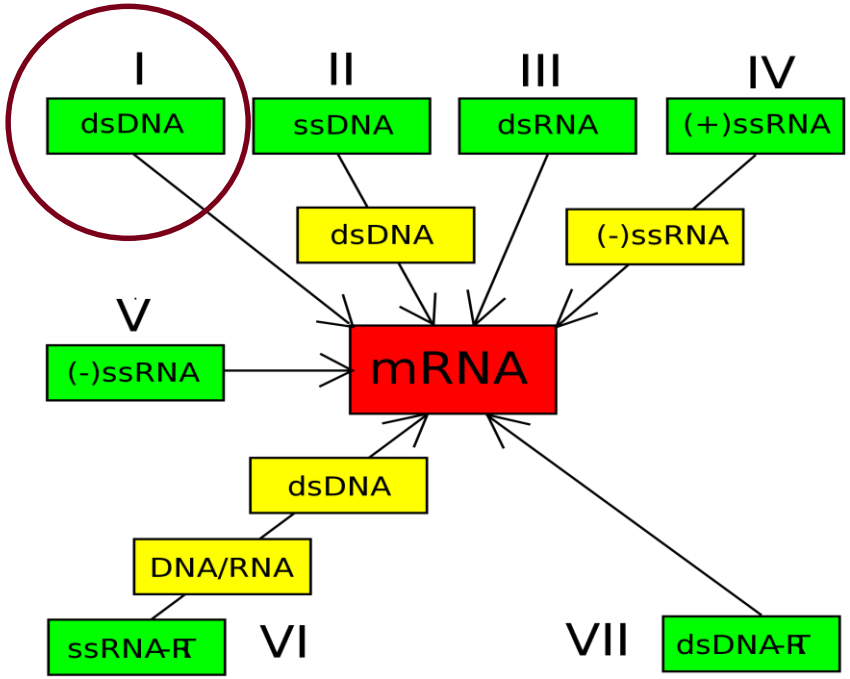
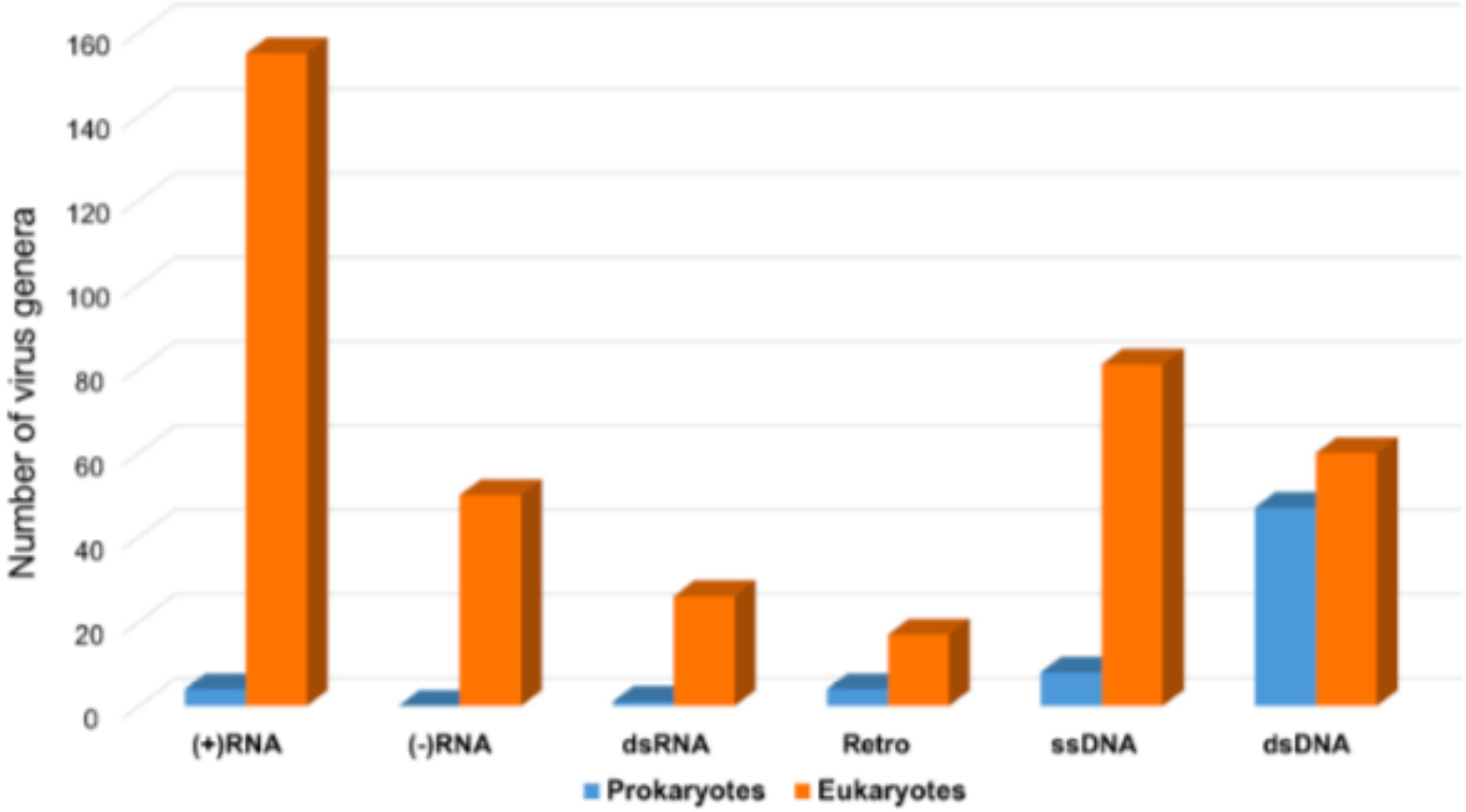
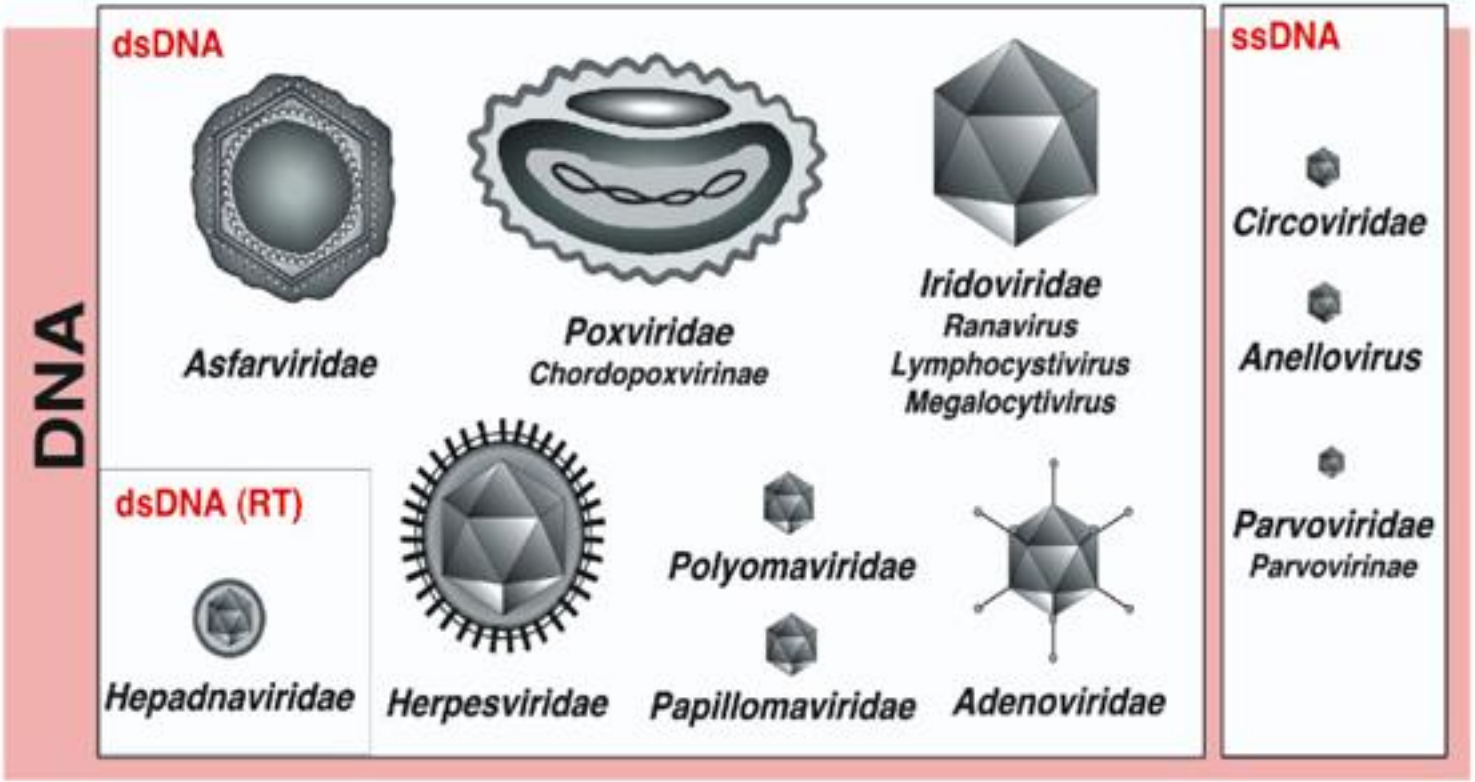
Baltimore Classification




Number of virus genera
160
140
120
100
80
60
40
20
0
(+)RNA
(-)RNA
dsRNA
Retro
ssDNA
dsDNA
Prokaryotes
Eukaryotes

Families and Genera of Viruses Infecting Vertebrates



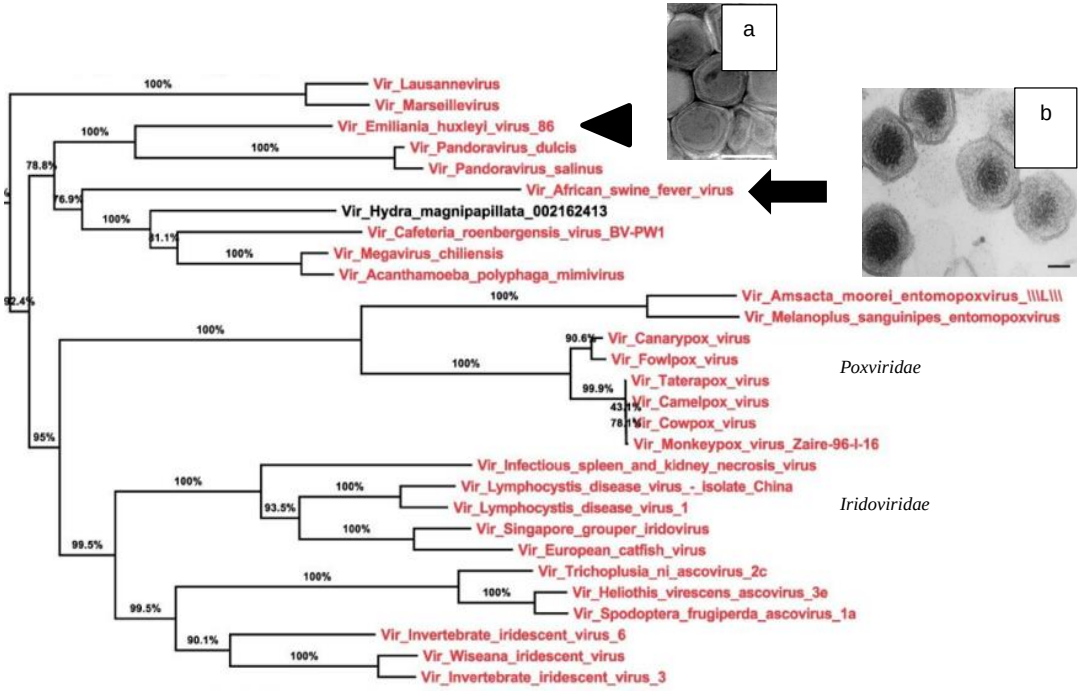
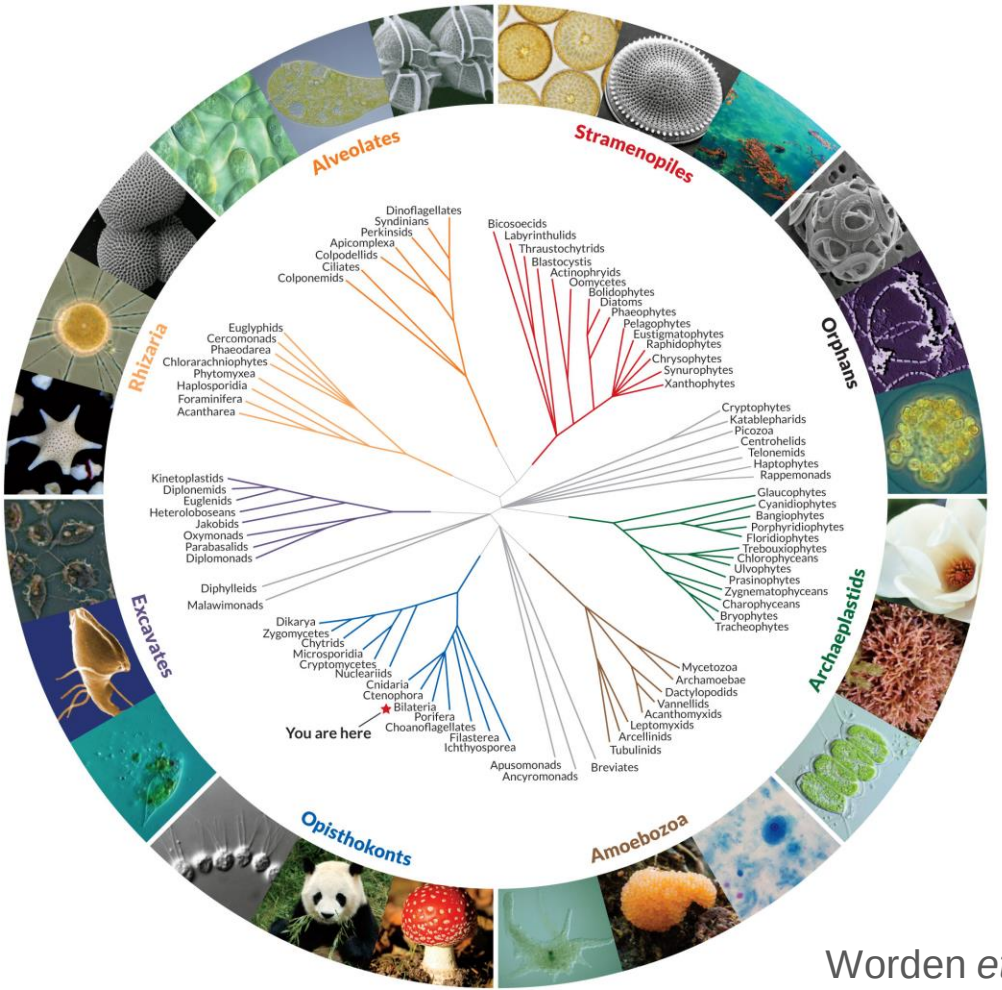


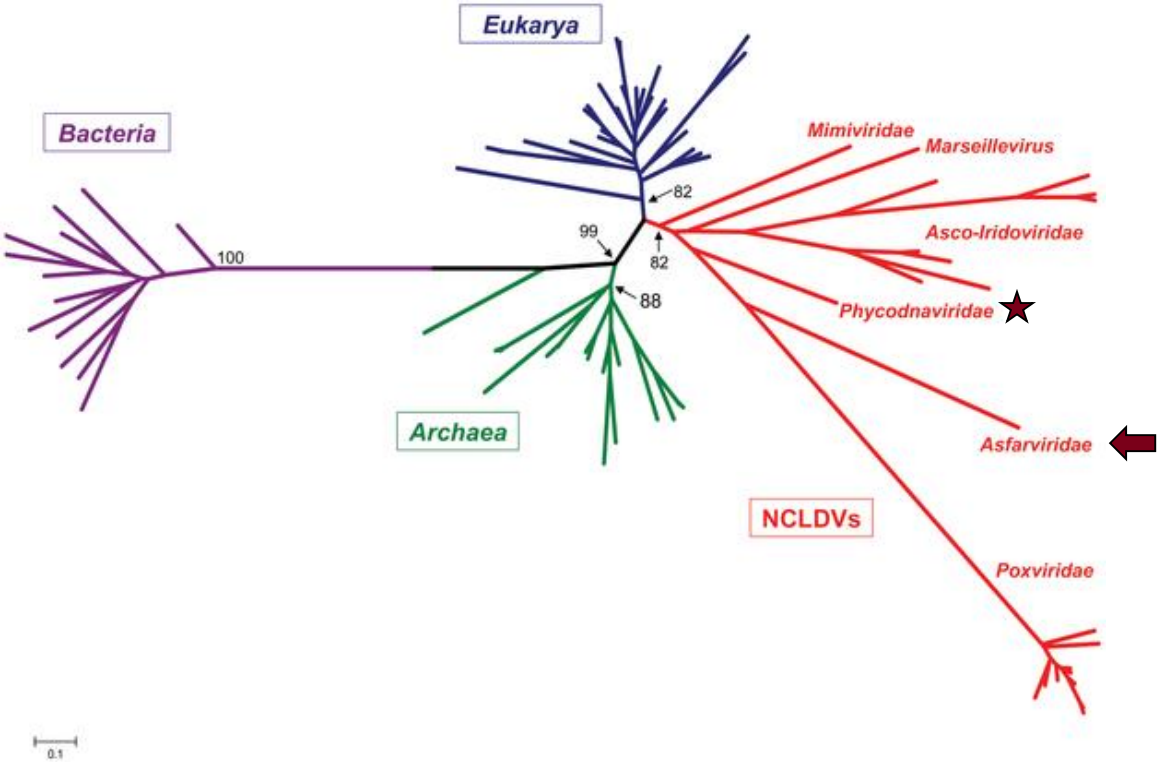
Figure 2. Phylogeny showing EhV (arrow head) and ASFV (arrow) embedded within a megavirus clade, outside the families *Poxviridae* & *Iridoviridae*. Adapted from Sharma et al (2014)[1], Inserts: Electron micrograph images of a) EhV, bar=170nm and b) ASFV, bar=50nm. Mackinder et al (2009)[10] and Andres et al (1998)[28], respectively.

Eukaryotes



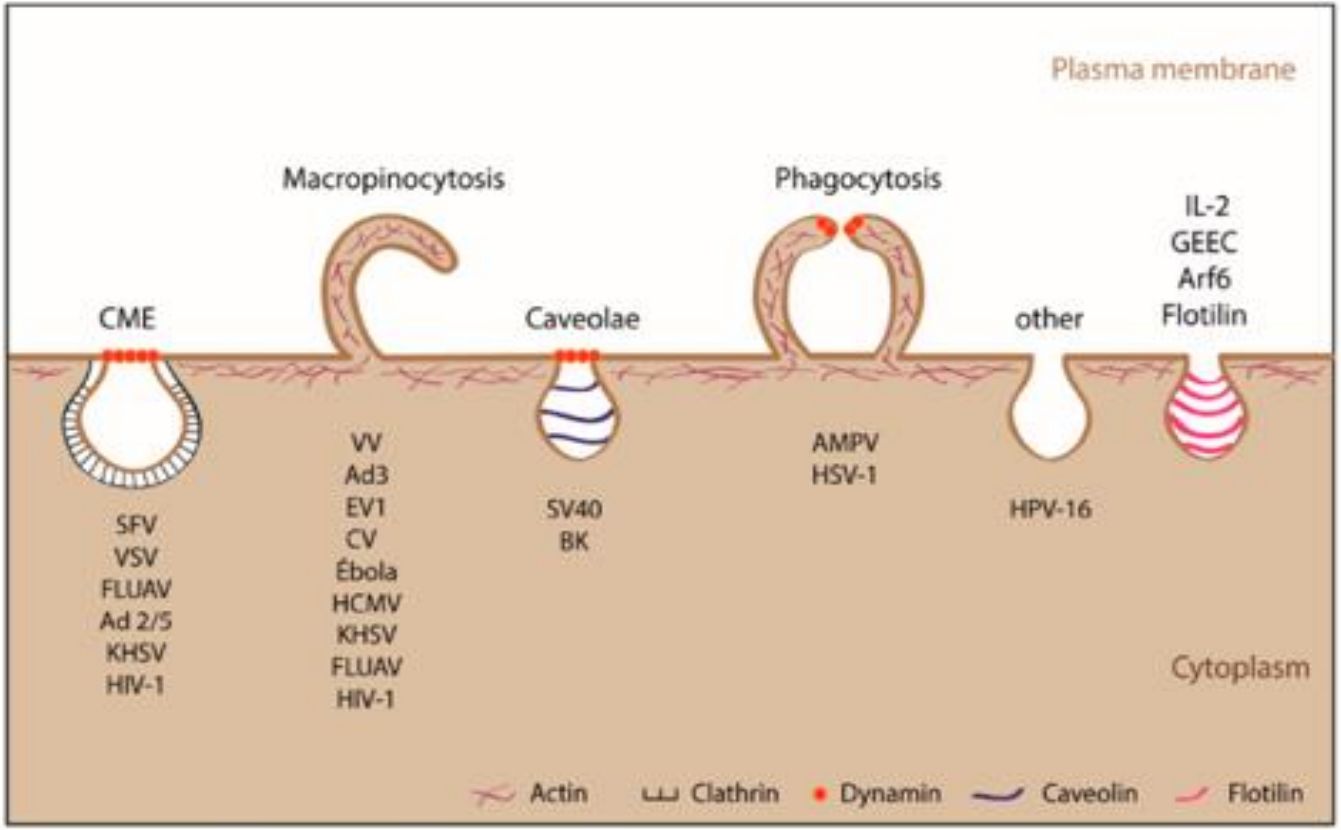
Worden *et al*. *Science* 2015

Figure 2. Phylogenetic tree of the RNA polymerase II beta subunit.



Giant viruses (NCLDVs)

Boyer M, Madoui MA, Gimenez G, La Scola B, Raoult D (2010) Phylogenetic and Phyletic Studies of Informational Genes in Genomes Highlight Existence of a 4th Domain of Life Including Giant Viruses. PLOS ONE 5(12): e15530. https://doi.org/10.1371/journal.pone.0015530
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0015530


Plasma membrane
Macropinocytosis
Phagocytosis
IL-2
GEEC
Arf6
Flotilin
CME
Caveolae
other
SFV
VSV
FLUAV
Ad 2/5
KHSV
HIV-1
VV
Ad3
EV1
CV
Ébola
HCMV
KHSV
FLUAV
HIV-1
SV40
BK
AMPV
HSV-1
HPV-16
Cytoplasm
Actin
Clathrin
Dynamin
Caveolin
Flotilin

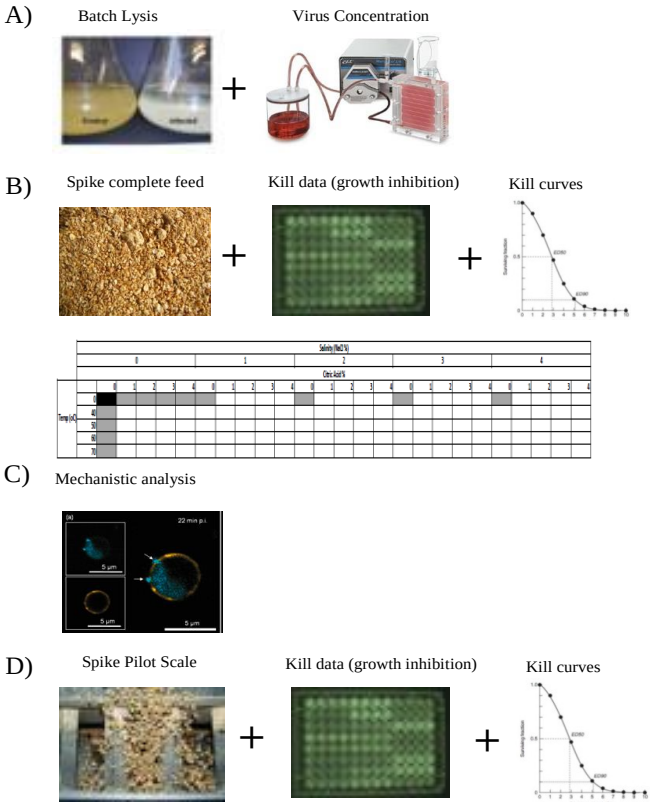


Figure 5. Experimental flow chart illustrating the four-step process required for the development of the RISNA assay

ASF-Soybean Meal Supply Chain Workshop

WELCOME BACK – Let’s Recap

Melissa Dumont, Animal Nutrition Association of Canada

Canada’s Approach to ASF Control in the Feed Ingredient Supply Chain

US SOY.ORG

Current U.S. Soybean Meal Imports

Philip Lobo Minneapolis, MN July 10, 2019

Objectives

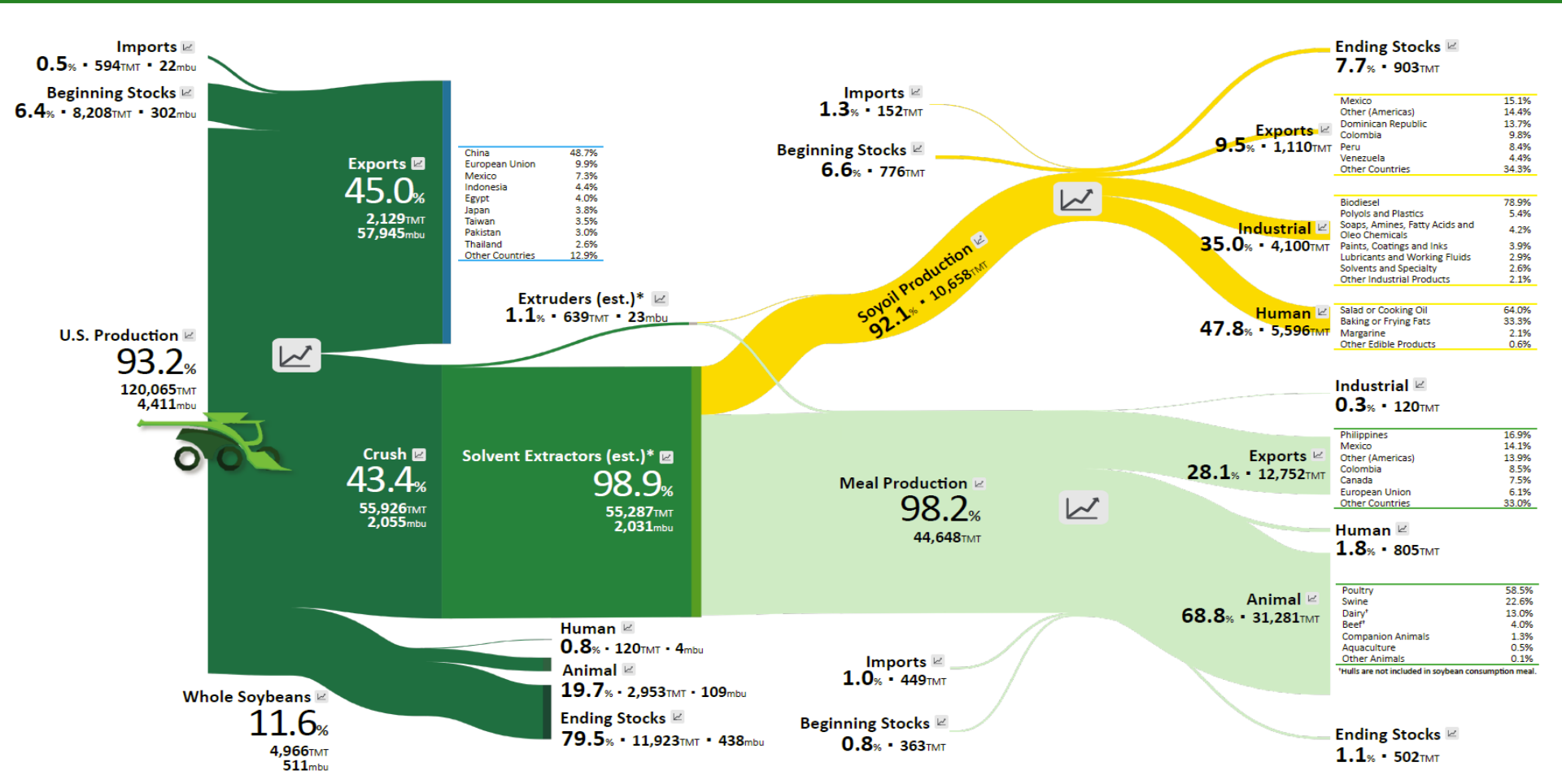
- Background
- U.S. Soybean Meal and Cake Imports
- What We Have Learned

USB Background

- 73 USB Directors
- About 570,000 Soybean Farmers
- Averaged $81.7 Million in National Checkoff Collections over Past Five Years*
- Used for education, outreach and promotion

*USB Diligent Board Books 7/18, 7/17, 7/16, 7/15, 7/14

U.S. SOYBEAN FLOW *(Marketing Year 2017/2018)*

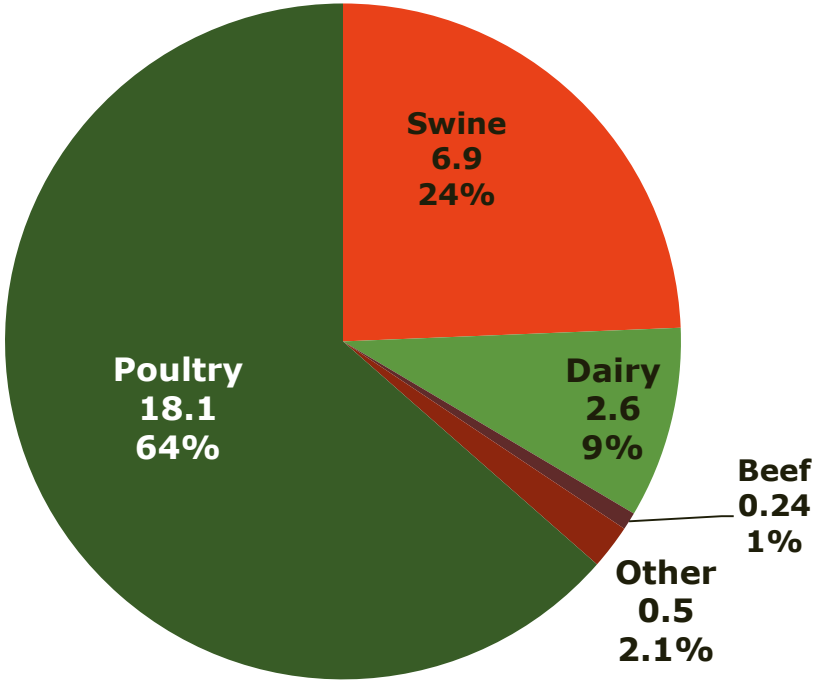


Source: Data is from USB Market View Database unless noted. Values are as of April 2019 update.
Reference https://marketviewdb.centrec.com/ for the complete most recent dataset.

click on icon to view the time series chart
percent of source • TMT=thousand metric ton • mbu=million bushels

2017 Domestic SBM Feed Utilization (million metric tons, excluding hulls)

Total of 28.3 million metric tons

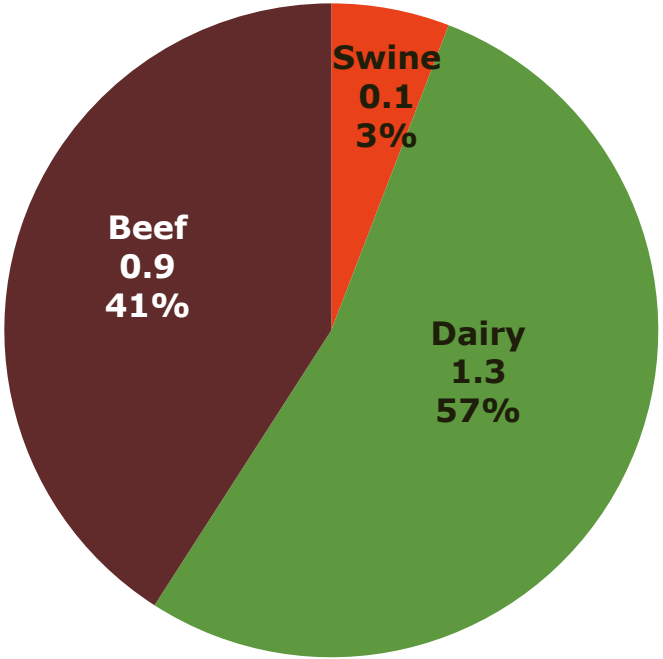


High volume but relatively lower risk due to heat and solvent treatment

Source: Soybean Meal Demand Analysis, Decision Innovation Solutions, Sept. 2018

2017 Domestic Hull Feed Utilization (million metric tons)

Total of 2.3 million metric tons



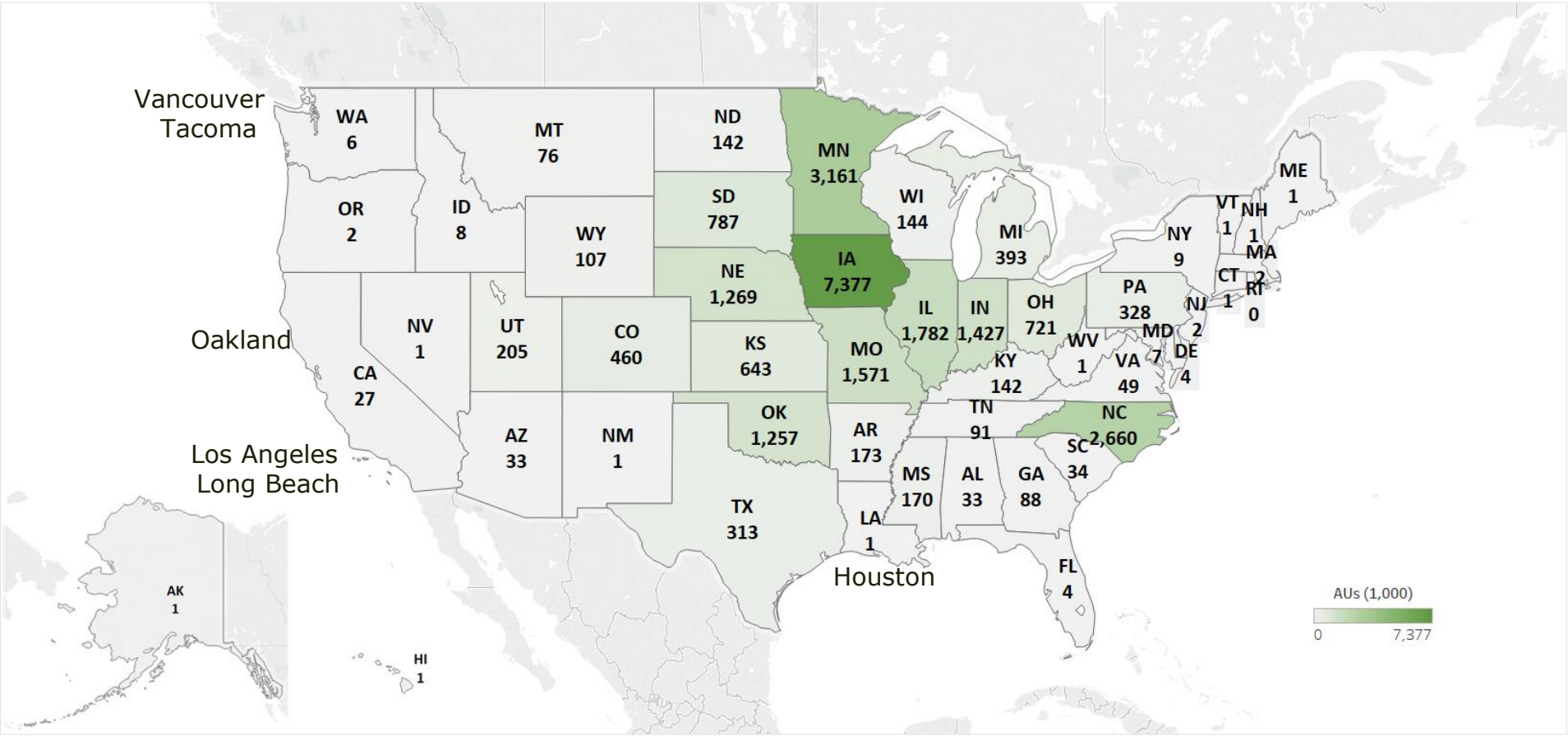
Low volume but higher risk due to minimal heat and no solvent exposure

Source: Soybean Meal Demand Analysis, Decision Innovation Solutions, Sept. 2018

Soy Checkoff Actions

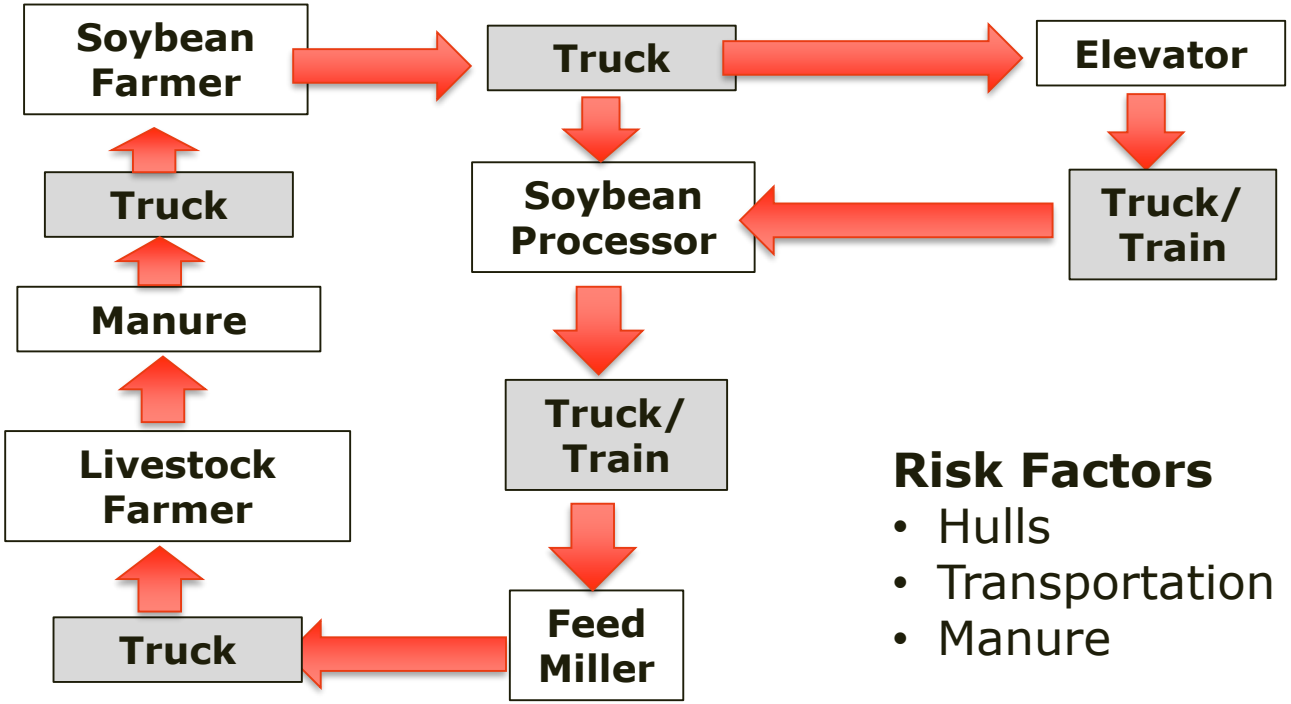
- Supported Scott Dee's work on mitigants for FADs
- Protocol for USSEC-funded travel outside the U.S.
- Protocol for travel to USSEC organized events inside and outside the United States
- Moratorium on all swine related activities in which teams would be organized from an ASF positive country

Hog AUs by State (2017)



Source: Soybean Meal Demand Analysis, Decision Innovation Solutions, Sept. 2018

U.S. Soy Value Chain



Risk Factors

- Hulls
- Transportation
- Manure

Overview of Commercial Soy Extraction

- Cleaning
- Dehulling
  - Reduces meal fiber, increases protein
- Conditioning—150 degrees F for 15-30 minutes
- Flaking—Additional pressure and heat
- Extracting—Soak in solvent at 145-150 degrees F for 30-40 minutes
- Desolventizer/Toaster/Dryer/Cooler (DTDC)
  - 150-165 degrees F for 10-15 minutes
  - 220 degrees F for 45-60 minutes

Source: Richard Clough, Ph.D.
Texas A&M University

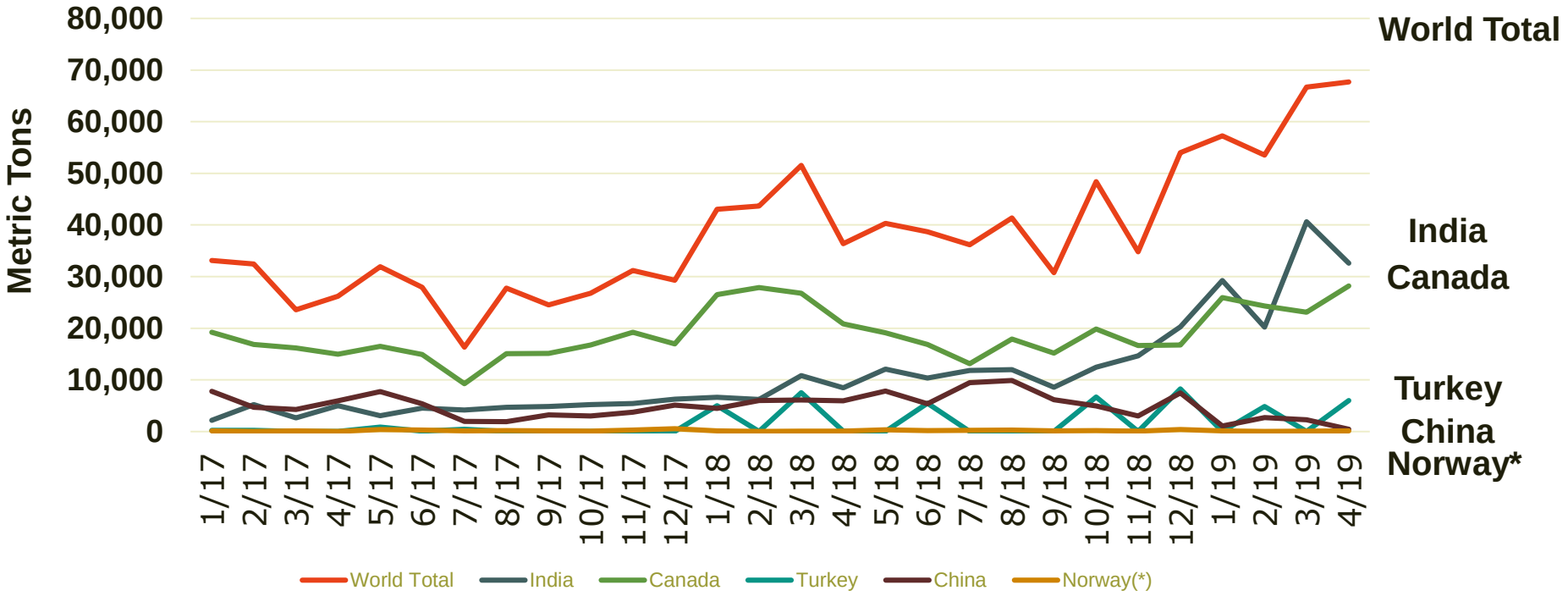
Overview of Commercial Soy Extrusion

- **Cleaning**
  - Removing foreign material and stones
- **Dehulling (Optional)**
  - Reduces meal fiber, increases protein
- **Grinding**
  - Coarse/Fine, depending upon the type of extruder used
- **Extrusion—130 degrees C to 150 degrees C**
  - Depending upon the extruder (Dry/Wet)
- **Drying/Cooling**
  - Depending upon the types of extruder used to process soybeans

Source: Mian Riaz, Ph.D.
Texas A&M University

U.S. Soybean Meal Imports

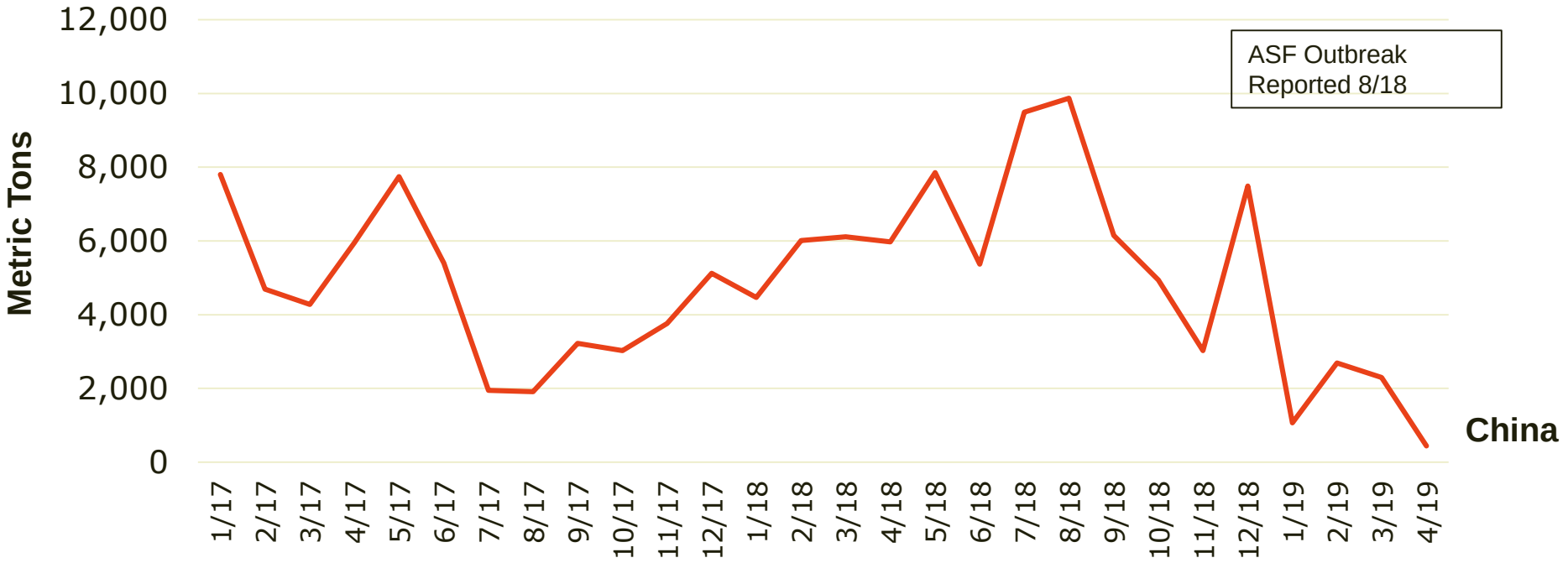
U.S. Soybean Meal and Cake Imports by month January 2017-April 2019



Source: U.S. Census Bureau
Provided by Mark Ash, USDA, ERS 6/7/2019

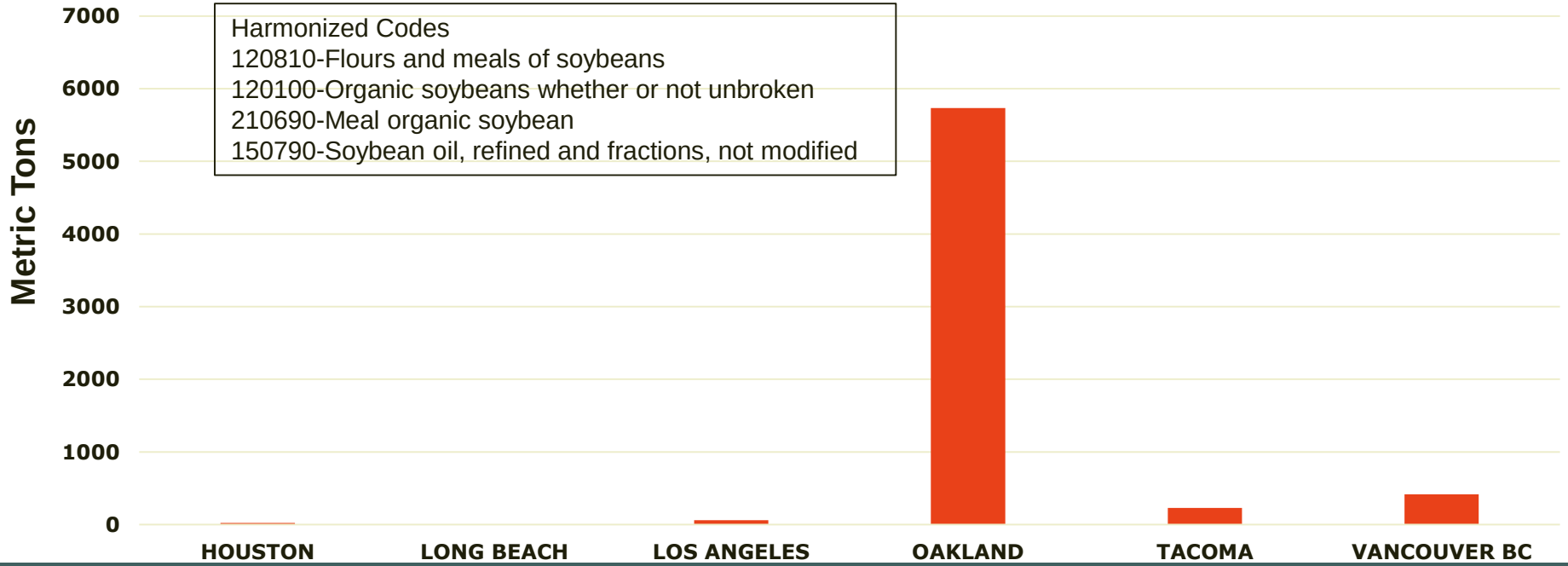
(*) denotes a country that is a summarization of its component countries

U.S. Soybean Meal and Cake Imports from China by month January 2017-April 2019



Source: U.S. Census Bureau
Provided by Mark Ash, USDA, ERS 6/7/2019

2019 SBM Imports from China by Port of Entry



Source: PIERS data
Provided by IHS Markit, 6/18/2019

What We Have Learned

What We Have Learned

- Volume imported from China is decreasing
- The vast majority is coming in through one port
  - Need to determine:
    - How to reach these companies/ Make them aware
    - Help ensure the biosecurity of future shipments
    - How to help organic pork producers
- Ramifications of an outbreak are enormous
  - Can ruin a huge portion of the domestic pork and feed industries

Thank You

USSEC
U.S. SOYBEAN EXPORT COUNCIL

USB UNITED SOYBEAN BOARD
ASA International Marketing

Discussion

What are the greatest risk factors for ASF introduction into the soy supply chain?

ASF-Soybean Meal Supply Chain Workshop

Lunch is Served
Please Return at 12:30 PM

ASF-Soybean Meal Supply Chain Workshop

WELCOME BACK – Let’s Recap

Breakout Assignments

Group 1 Jennifer van de Ligt	Group 2 Paul Sundberg	Group 3 Polly Sullivan	Group 4 Pedro Urriola	Group 5 Jerry Shurson
•Lisa Becton •Stephanie Burgess •Paul Burke •Paul Davis •Ben Warren	•Melissa Dumont •Keenan McRoberts •Amanda Palowski •Mike Spangler •Liz Wagstrom	•Brian Balukoff •David Fairfield •Dawn Hunter •Conley Nelson •Mickie Trudeau	•David Holzgraefe •AJ Mercado •Declan Schroeder •Brigette Shelley •Gordon Spronk	•Mike Bohmbach •Clayton Johnson •Dan Jones •Philip Lobo •Harry Snelson

ASF-Soybean Meal Supply Chain Workshop

Group Reports and Feedback

Discussion

What do pork producers and soybean growers need to know?

Summary and Consensus

- Objectives and Outcomes
  - Potential risk factors
  - Prevention, mitigation, product differentiation strategies
  - Communication and research needs
- Key Messages
- Parking Lot
- Next Steps

Closing Discussion

- What’s your primary takeaway from today’s session?
- What next steps will you take within your organization?
- What actions do you expect researchers and industry associations to take?

University of Minnesota

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