

Lessons Learned from Evaluating Biosecurity Practice in Commercial Farms in the Fight against ASF

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Presentation Flow

- Introduction
 - Biosecurity Against ASF: Why the need to keep talking about it?
- Case Studies
 - Interactions with farms on Biosecurity improvements
- Lessons Learned

Introduction

Zoetis Philippines Biosecurity Audit

ASFV RISK ASSESSMENT TOOL

The screenshot shows the user interface of the ASFV Risk Assessment Tool. At the top, there is a green navigation bar with the Zoetis logo, 'ASSESSMENTS HELP', a language selector set to 'English', and a settings gear icon. Below the navigation bar, the user's name 'Evans Vanodine' and the tool name 'ASFV Risk Assessments' are displayed, along with a 'CREATE ASSESSMENT' button. A filter bar indicates 'Currently viewing all assessments' with tabs for 'ALL', 'DRAFT', 'IN PROGRESS', and 'COMPLETE'. The main content area features two promotional banners: one for 'Evans Vanodine Leaders in industrial hygiene and livestock protection' with a 'Learn More' button, and another for 'Featured Product Multi-Purpose Iodophor Disinfectant' with a 'Learn More' button and an image of the product. At the bottom, a table header lists columns: ASSESSMENT NAME, FARM NAME, AUDIT DATE, LAST UPDATED, CREATED BY, POINTS, HIGH RISKS, BIOSECURITY SYSTEM, and STATUS.

Key Areas:

- Pests, Barns and Silos, Manure, Dead Pigs, Visitors, employees, materials, replacement pigs coming into the farm, entrance/shower area, Cleaning, disinfection, Market area,

Sick animals

High Risk Areas:

- < 1km from other farms
- Bringing Food into the farm
- Handling of materials into the farm
- Disinfection of materials into the farm
- Separation of Clean and dirty areas at all entrances

Zoetis Philippines Biosecurity Audit

	No of Farms	Total Sows	Ave Sows per Farm	Ave Audit Score	Ave # of High Risks	Biosecurity Level		
						High	Medium	Low
North Luzon	82	50,595	617	167	4	0	5	77
South Luzon	63	41,540	659	166	5	0	5	58
VisMin	53	37,370	750	170	4	2	13	38
Total	198	129,505	(passing score >215)	168	15	1.2%	13.6%	87%

* Done by Zoetis Philippines Inc in 2019-2020

Zoetis Philippines Biosecurity Audit

TOP 10 BIOSECURITY RISKS

IDENTIFIED HIGH RISKS	COUNTS
48-hour downtime for visitors	128
Demarcation between clean and non-clean areas	131
<1 km proximity to other farms	119
Entrance gate shower	118
Storing old manure at farm site	115
Disinfection of incoming pallets/boxes	89
Bringing in food by personnel	56
Special clothes for farm workers	46
Use of own trucks to transfer pigs to market	26
Trucking cleaning and disinfection before farm entry	14

2. $128/198 = 64\%$
1. $131/198 = 66\%$
3. $119/198 = 60\%$
4. $118/198 = 60\%$
5. $115/198 = 58\%$
6. $89/198 = 45\%$
7. $56/198 = 28\%$
8. $46/198 = 23\%$
9. $26/198 = 13\%$
10. $14/198 = 7\%$

* Done by Zoetis Philippines Inc in 2019-2020

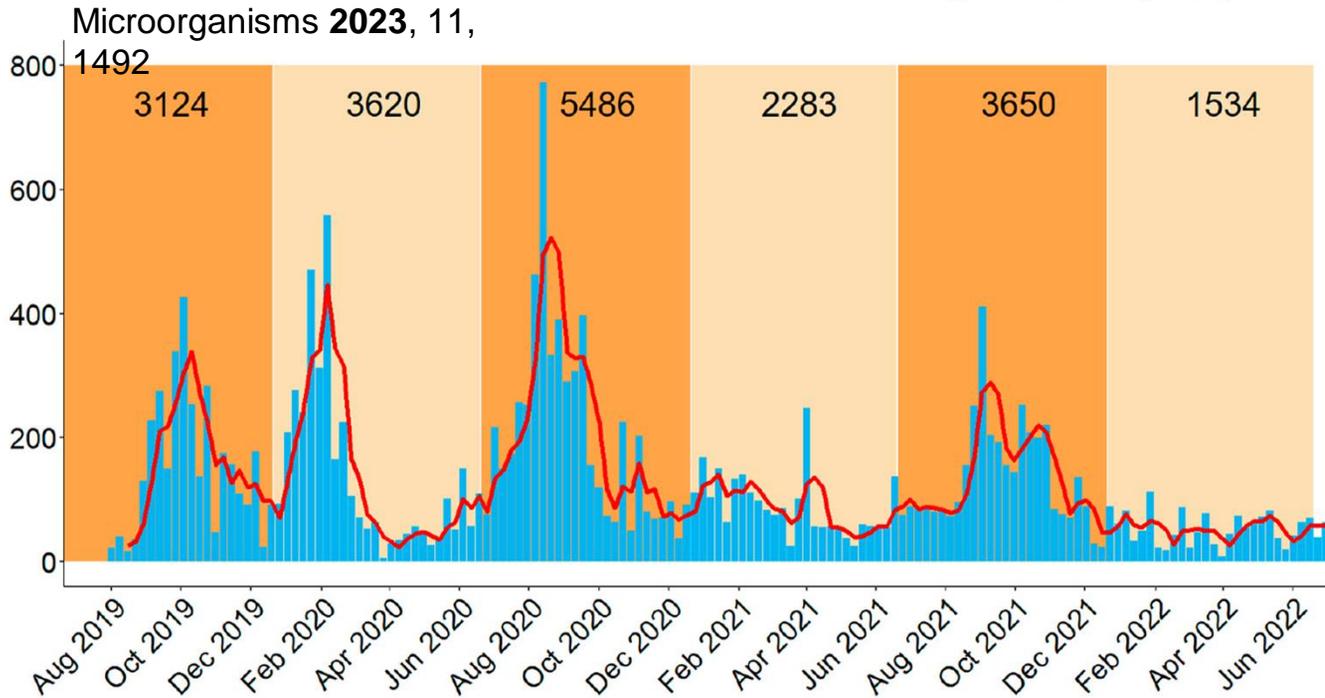
Farm Code	Location (Sow Level)	Status
Farm 1 (5 sites)	Tarlac (1500 SL); Pangasinan (1500 SL) Pampanga (1000 SL)	Repop (600 SL) Continuous Operation Closed
Farm 2 (1 site)	Pampanga (2000 SL)	Repop (200 SL)
Farm 3 (2 sites)	Pampanga (1000 SL) Tarlac (1000 SL)	Repop (100 SL) Repop (100 SL)
Farm 4 (2 sites)	Bulacan (800 SL)	Closed
Farm 5 (2 sites)	Bulacan (1000 SL)	Repop (600 SL)
Farm 6 (4 sites)	Cavite (4500 SL) Batangas (200 SL)	Continuous Operation Repop (100 SL)
Farm 7 (2 sites)	Davao (2000 SL)	Continuous Operation
Farm 8 (1 site)	Davao (1000 SL)	Continuous Operation
Farm 9 (1 site)	Batangas (1200 SL)	Repop (400 SL)
Farm 10 (1 site)	Batangas (200 SL)	Repop (160 SL)
Farm 11 (1 site)	Batangas (600 SL)	Continuous Operation
Farm 12 (1 site)	Bukidnon (300 SL)	Continuous Operation

Article

Space–Time Dynamics of African Swine Fever Spread in the Philippines

Chia-Hui Hsu ¹, Maximino Montenegro ² and Andres Perez ^{1,*}

Figure 1. Weekly number of African Swine Fever (ASF) outbreaks (blue bars) and 3-week moving average (red line) reported in the Philippines between 16 August 2019 and 20 July 2022. The numbers in the top indicate the cumulative number of outbreaks reported on the first (1 January–30 June) and second (1 July–31 December) semester of each year, which is indicated by light and dark orange background shades, respectively.



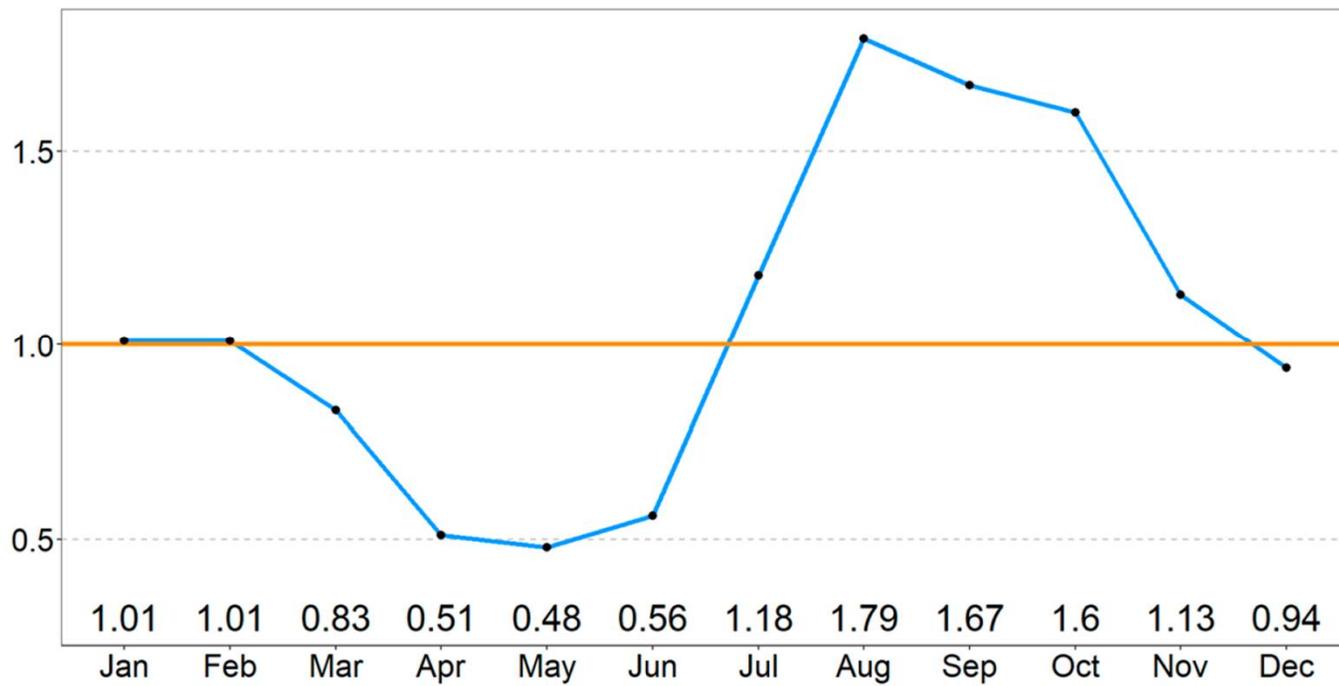
Article

Space–Time Dynamics of African Swine Fever Spread in the Philippines

Chia-Hui Hsu ¹, Maximino Montenegro ² and Andres Perez ^{1,*}

Microorganisms **2023**, *11*,

Figure 2. Seasonal index, S_i (blue line), computed as the ratio between the cumulative number and the monthly cumulative average of African Swine Fever (ASF) outbreaks reported per month in the Philippines between 16 August 2019 and 20 July 2022. The orange line indicates the value of $S_i = 1$.



Case Studies – Interactions with Farms on Biosecurity Improvement

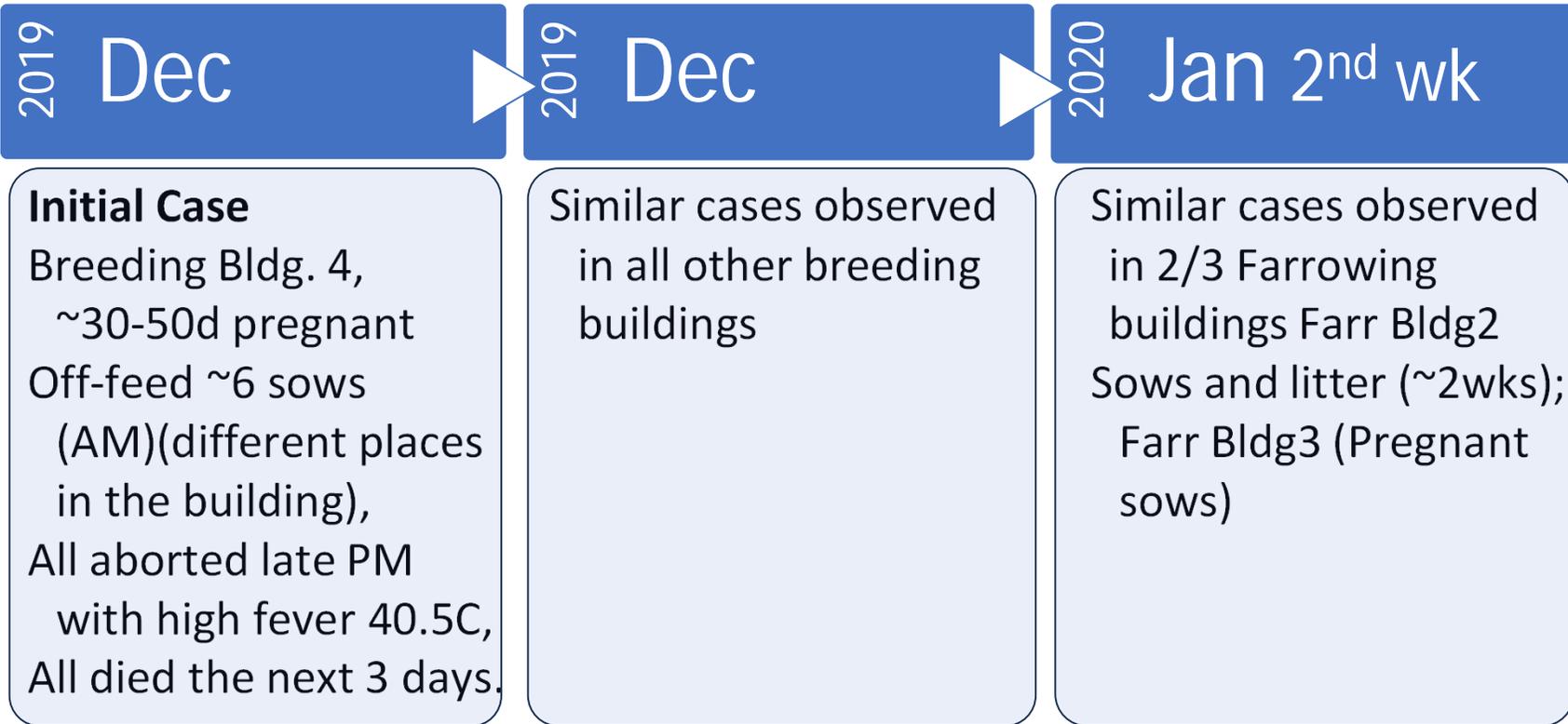
Case 1: 500 SL Farrow to Finish Farm

Biosecurity in Place

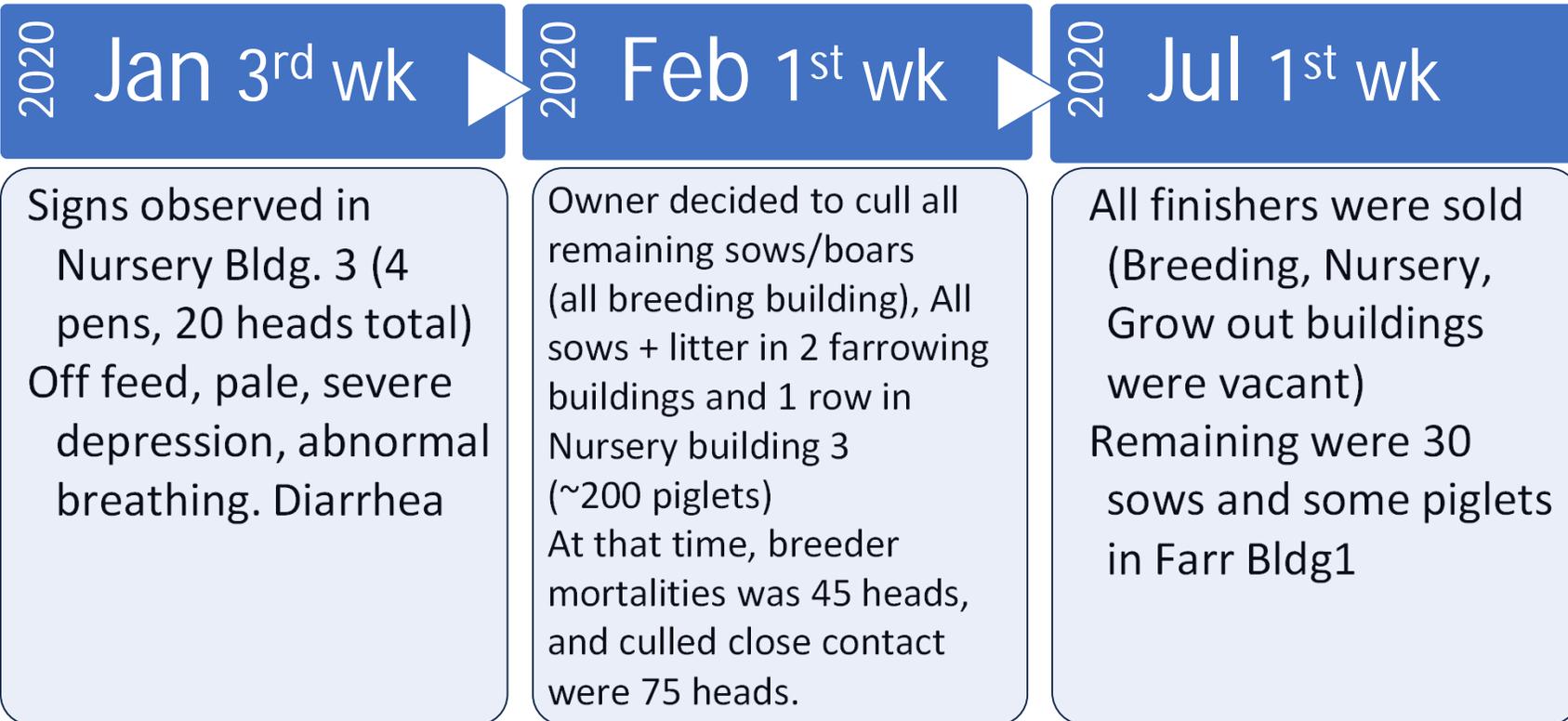
- Fully fenced perimeter. Tire vat, Spray Vehicle at entrance
- Parking 200m away from the Pig area
- Shower, change of clothes, footwear, Required at Gate of Pig Area

Health Status Pre-ASF: Positive but stable for PRRS, Mhyo, APP

Case 1: 500 SL Farrow to Finish Farm



Case 1: 500 SL Farrow to Finish Farm



Case 1: 500 SL Farrow to Finish Farm

REPOP ATTEMPT 1

- **Only Disinfection and downtime done**
- Sep 2020 (1st wk)
 - 30 pregnant P0 (93 -100 days pregnant) delivered to Farrowing Building 2
- Oct 2020 (1st wk)
 - 30 pregnant P0 (93 -100 days pregnant) delivered to Farrowing Building 3
- Nov 2020 (1st wk)
 - Off feeding in sows, severe depression (including majority of litters) in Farrowing Building 3
 - Decided to cull all animals in this building

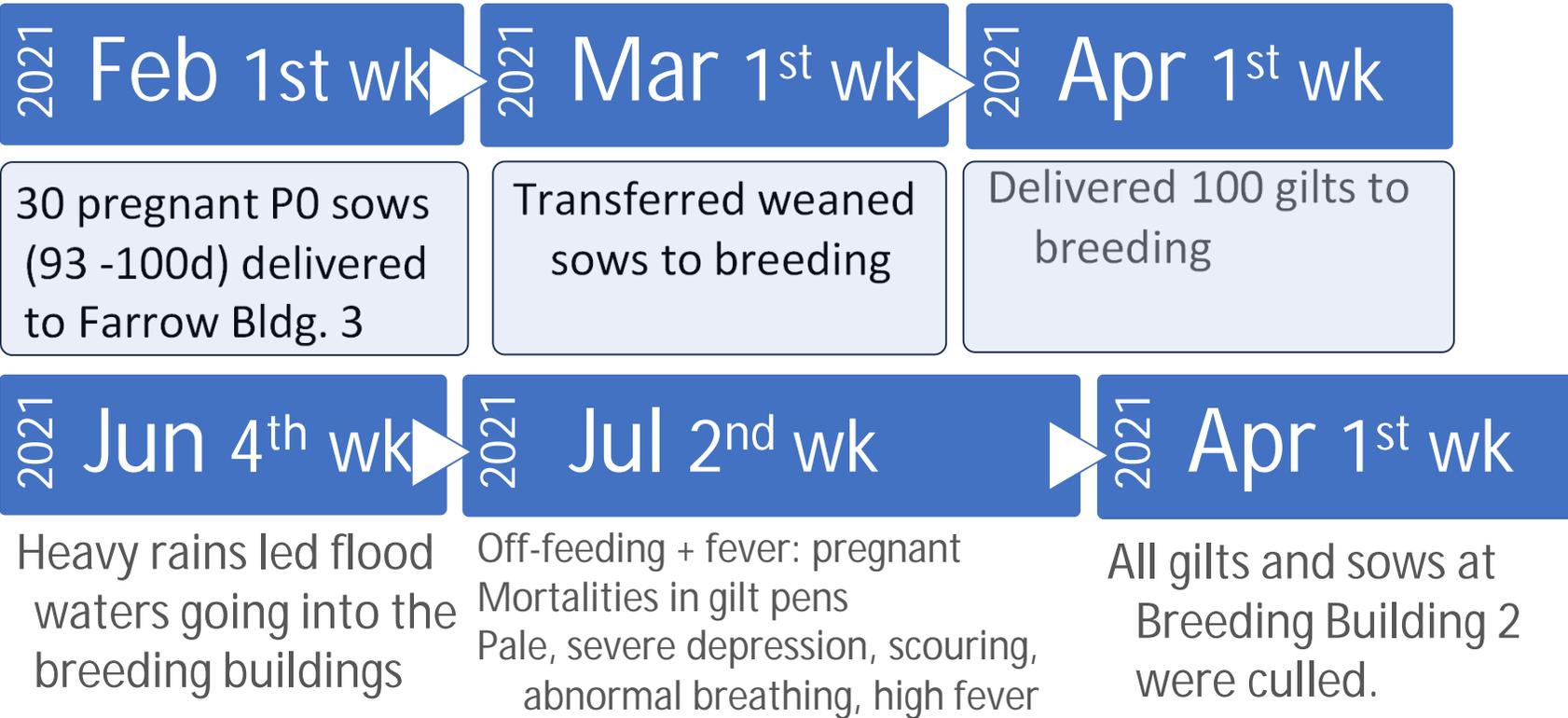
Case 1: 500 SL Farrow to Finish Farm

REPOP ATTEMPT 2

- Disinfection and downtime
- Bird proofing all farrowing and breeding buildings
- Single entrance and exit all buildings
- Change of footwear + handwash at entry
- Repairs done Nov-Dec-January 2021

NEW

Case 1: 500 SL Farrow to Finish Farm

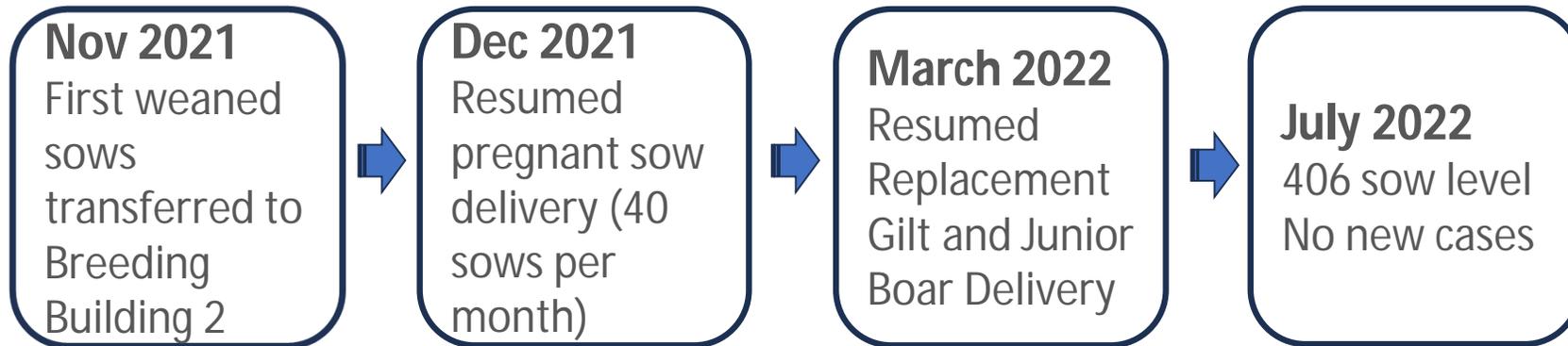


Case 1: 500 SL Farrow to Finish Farm

REPOP ATTEMPT 3

- All walkways were bird proofed (included in the clean area)
- Drainage around breeding buildings repaired (no entry of flood waters in pig area)
- Shower facility for breeding personnel built
- All repairs done August-September-October

NEW



Case 2: 1,200 SL Farrow to Finish Farm

Biosecurity in Place

- Fully Fenced | Shower in, complete change of clothes (including viajeros)
- UV Box (gate) all incoming outside supplies | Uses commercial feeds
- Separate parking area for visitor cars

Health Status Pre-ASF (Positive stable to PRRS, Mhyo, APP)

Initial Reported Case

- Sep 14, 2020: 2 sows aborted, died Sep 15 & 16 (Breeding BldgA1 row 4)
- Sep 23, 2020: 3 sows aborted, died Sep 24. 100% Rapid test positive (Breeding BldgA1 row 3)

Case 2: 1,200 SL Farrow to Finish Farm

Sep 25, 2020: Culled 12 pregnant sows (4 sows on each side of the positive sow)

Oct 2020 (1st wk):

- Initial cases (off-feeding in Farrowing Rm 1B (4 heads))
- Rapid Ag test kit + | Cull all 4 and 8 sows in close contact (one on each side of the sows)

Oct 2020 (2nd wk):

- Off feeding reports, high fever (Breeding Building – Old and A1, Farrowing Room 1B)
- 100% Positive Rapid Ag Test Kit (7 heads) | Culled all 7 and 15 in contact

Oct 2020 (3rd wk)

- Gilt and Dry sow buildings affected, culled 20 dry sows and 40 gilts
- Boar house affected, culled 12 boars

Case 2: 1,200 SL Farrow to Finish Farm

Oct 2020 (4th wk)

- Owner decided to collect blood from ALL remaining sows (~1,100 sows)
- Did PCR test on 220 pools (1:5 pooling)

Nov 2020 (1st wk)

- PCR Test Results: 4 pools ASF Positive
- 4 positive pools tested individually: 9 out of 20 samples were POSITIVE
- 9 out of 1100 sows were positive
- Decided to cull all 9 positive sows, and 24 in-contact sow

Case 2: 1,200 SL Farrow to Finish Farm

Nov 2020 (2nd wk)

- Another 10 tested positive using Rapid Ag kit,
- Culled all 10 and 22 in contact sows
- First case in NH Rm 1B in 3 pens
 - Culled 6 pens (120 piglets 4-5 weeks old)

Dec 2020 – Jan 2021

- Cases still reported in sows both from breeding and farrowing
- First cases in GF Building (75 120 days old culled)

Case 2: 1,200 SL Farrow to Finish Farm

Feb 2021

- Owner decided to drastically reduce sow level to 250
- Culled around 600 sows the whole month of February
- About 80 remained in the F3 different farrowing buildings
- The rest remained in 1 Breeding room
- No movement of sows, no vaccination

Case 2: 1,200 SL Farrow to Finish Farm

Repop Strategy Execution (March –July)

- Completely cleaned and disinfected all buildings, drainage and surroundings
- Implemented segregation of biosecurity zones
- Bird proofed all buildings that will be used
- Covered all walkways (with roofing, bird proofing)
- Installed shower facilities at Breeding, Farrowing, Nursery, Grow-out)
- Installed Fumigation boxes (for small items) and rooms (for Feeds) in all sections
- Reorganized staff housing per section
- All grower pens will be gradually converted to solid partitions

Case 2: 1,200 SL Farrow to Finish Farm

Aug 2021

- Started selecting market hogs (145 days old) for gilt conditioning
- Movement of sows (Breeding to Farrowing; Farrowing to Breeding) started

Dec 2021

- Breeding of gilts started
- Selected uncastrated male pigs to be used as teaser boar

Feb 2022

- Full day brownout experienced, Forced to open tunnel vent buildings
- Failed to anticipate this. All tunnel vent buildings were not bird proofed
- Case reported: 3 hds, 82 DO nursery) 4 days post brownout
 - Pale, high fever, severe depression, purple snout and ears
 - Positive in Rapid Ag kit | Culled 14 heads in one pen

Case 2: 1,200 SL Farrow to Finish Farm

July 2022

- Sow Level: 426 sows
- PWM: 5.4%
- Nursery Mort: 2%
- GF Mort: 2%
- ADG: 680
- Target for 2022: 600 sows

Case 3: 1000 SL Farrow to Finish Farm

New Farm Project

- Company has 2 other existing swine farms
- Biggest questions from the owners:
 1. Should we build a farm despite ASF still going around?
 1. How can we ensure that the farm will not be affected?
 1. What can we do to make sure it will be safe?

Case 3: 1000 SL Farrow to Finish Farm

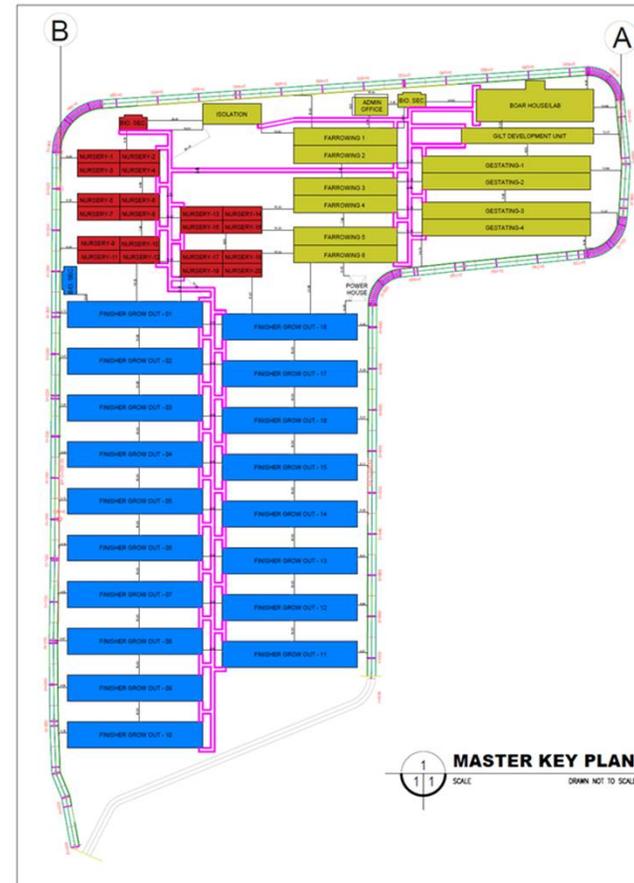
For Several Meetings in the planning stage:

- Project Manager (Engineer), Company Engineer, Veterinary consultants
 - Pig Spaces Required
 - Pig Movement within the site
 - Biosecurity for the whole site
 - Incoming Vehicles, Feeds, People, Etc.

Case 3: 1000 SL Farrow to Finish Farm

Biosecurity Plan (Incorporated in the Plan)

- Biosecurity Zoning
- Animal Movement
- Entry of People
- Entry of Supplies
- Entry of Feeds and Feeding Management
- Exit for Mortalities
- Disposal of Mortalities
- Flood Control
- Pest Control



Lessons Learned

Lessons Learned # 1

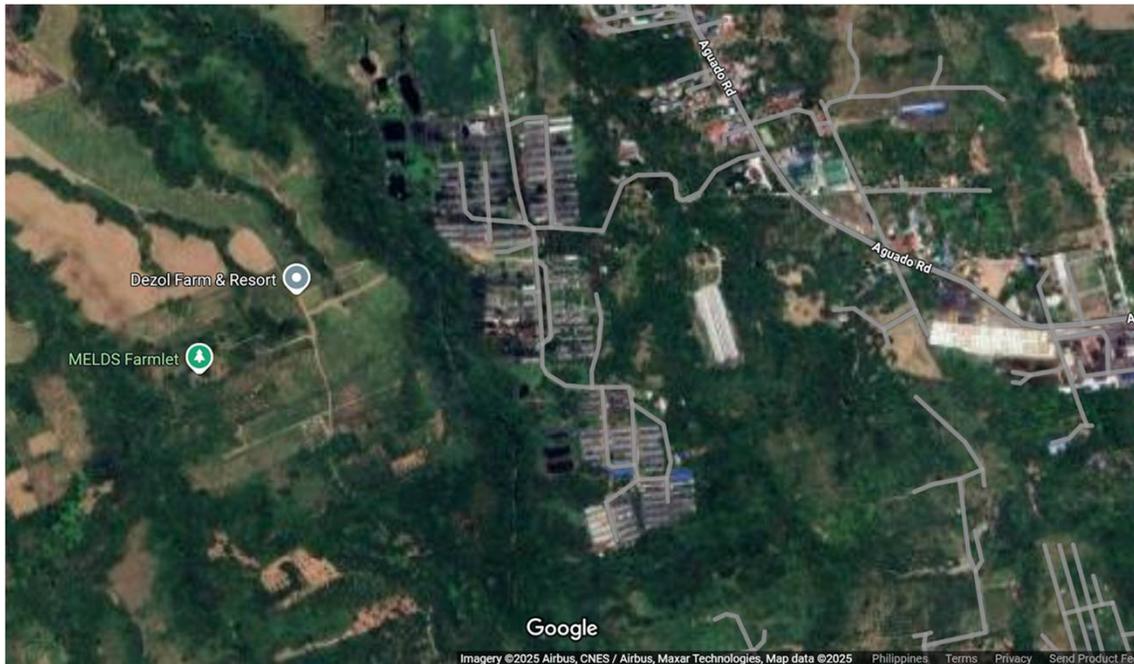
Fundamental Principles of Biosecurity

- **Segregation: The creation and maintenance of barriers**
 - Physical: Walls, Fences, Doors, signage, PPE
 - Procedural: Entry, Personal Hygiene, movement of personnel, waste disposal, Training
 - Temporal: Time between visits and duration in contact
- **Cleaning and Disinfection: Reduction in microorganism numbers**
 - Cleaning: Removal of organic and other soiling
 - Disinfection: Reduction of harmful organisms to a safe level

The Importance of Biosecurity on Swine Herd Viability and Performance (LinatocM)

Incomplete
Understanding on
the Fundamental
Principles of
Biosecurity

Lessons Learned # 2



Location, Location, Location!

- Topography
- Flow of rainwater and floods
- Distance to community

Lessons Learned # 3

When conducting biosecurity audits, filling out the form and the scores should be the last.

Walkthrough each step of the farm's biosecurity plan for people, supplies, feeds, vehicles coming into the farm.

Lessons Learned # 4

Comparative Performance (Farm A vs Farm B) Production Year 2022			
PARAMETER	Farm A	Farm B	Production Difference (Farm A- Farm B)
Sow Level	613	541	72.00
Litter size at birth: Alive	10.97	11.40	-0.43
Mummified	0.03	0.03	0.00
Stillborn	0.46	0.02	0.44
Abnormal	0.01	0.00	0.01
Underweight	0.02	0.04	-0.02
Total	11.82	12.00	-0.18
Litter size at weaning	10.7	10.58	0.12
Weaning age, days	27.2	27	0.20
Average weaning weight, kg.	7.1	7.6	-0.50
Farrowing rate, %	86.83%	89.80%	-2.97%
Preweaning mortality, %	5.50%	3.80%	1.70%
Mortality based on total population, %	3.40%	2.00%	1.40%
Farrowing/Sow index	2.45	2.44	0.01
P W S Y*	26.26	27.60	-1.34
Average Daily Gain, g/day.	547	614.00	-67.00
Adjusted 180-day weight, kg.	94.11	110.52	-16.41
Adjusted Farm Efficiency	2.55	2.43	0.12
Adj. Med Cost/live animals Sold	63.2	56	7.20
P P S Y*	21.75	23.67	-1.92

^a Based on average effective sows (productive and non-productive)

Swine Farming is a business. Any inputs (Biosecurity Infrastructure) must produce improvements in the profitability of the farm.

Lessons Learned # 5

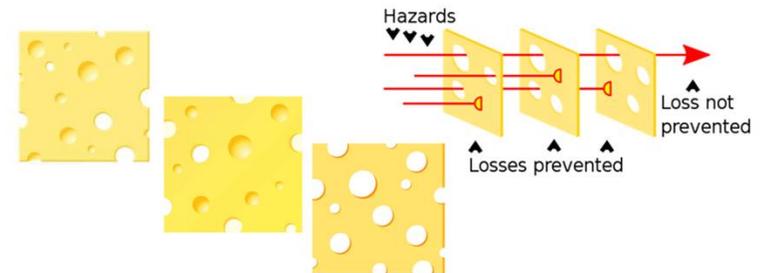
Biosecurity – Critical Control Points

Location of the farm
Separation of areas
Entry control - personnel
Entry control – supplies and vehicles
Feed and water quality
Materials equipment and maintenance
Livestock housing and Control (including Pest control)
Cleaning and Disinfection program
Medication and treatment

The Importance of Biosecurity on Swine Herd Viability and Performance (LinatocM)

The Swiss Cheese Model

- The model was originally formally propounded by James T. Reason of the University of Manchester.



The Importance of Biosecurity on Swine Herd Viability and Performance (LinatocM)

For every Critical Control Point identified, there should be several approaches lined up to minimize the risk

Lessons Learned # 6

Training, Compliance, and Monitoring Solutions



Comprehensive Training

Providing thorough training ensures all staff understand biosecurity practices and protocols clearly.

Compliance Protocols

Biosecurity compliance officer ensures standardized biosecurity protocols are followed across operations through compliance monitoring and audit.

Continuous Monitoring

Regular and surprise audits help detect and address biosecurity issues promptly for effective adherence. Use of CCTV cameras done in some operations.

Biosecurity should not only be an initiative in the farm but should be part of the **CULTURE** of the farm.

Lessons Learned # 7

Biosecurity improvements should be part of the continuous improvement process of each farm

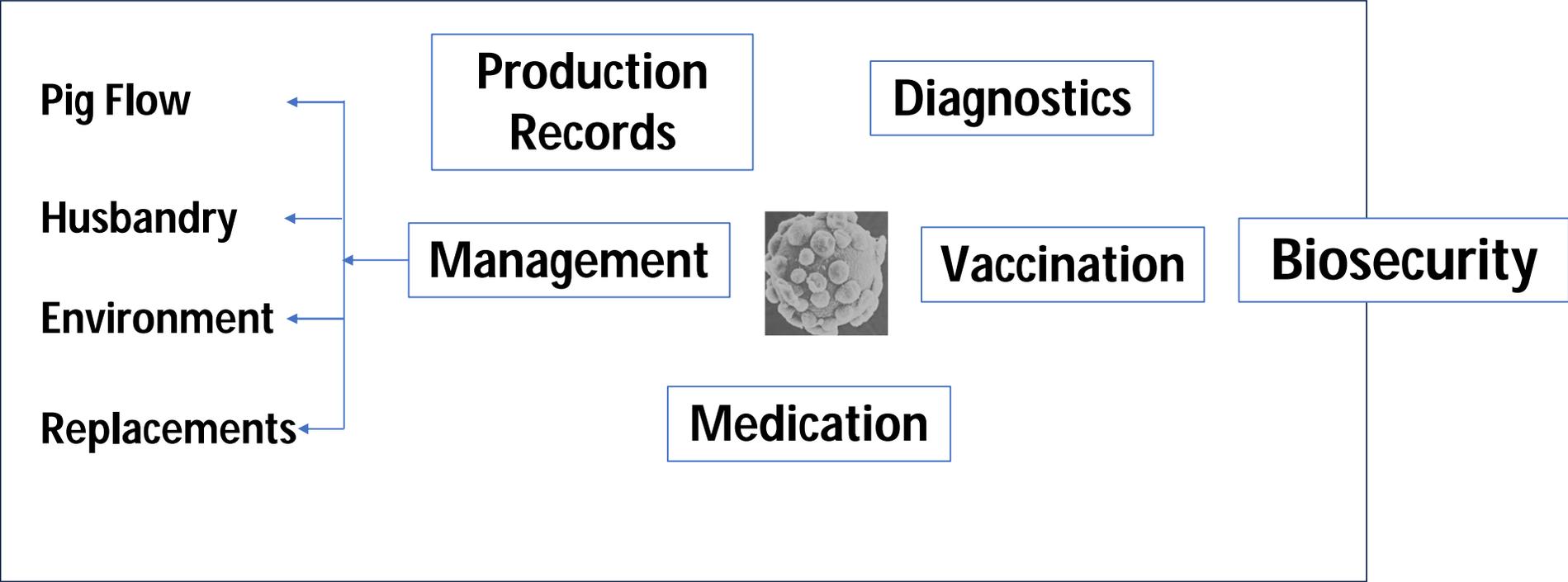
- Tiny details may need improvements
- New technologies may come up that will achieve the objective at significantly less cost

Lessons Learned # Summary

1. Address incomplete understanding (fundamental principles of biosecurity)
2. Location is important to include topography, etc
3. During audits, walkthrough with people in charge how they are doing things
4. Swine Farming is a business. Any biosecurity infrastructure recommended entails additional capital.
5. For every CCP identified, there should be several approaches lined up to minimize the risk
6. Biosecurity should not only be an initiative in the farm but should be part of the CULTURE of the farm.
7. Biosecurity improvements should be part of the continuous improvement process of each farm.

Conclusion

Tools in Herd Health Management



BIOSECURITY
IS IN OUR HANDS

