



COMMERCIAL FARMING STANDARD

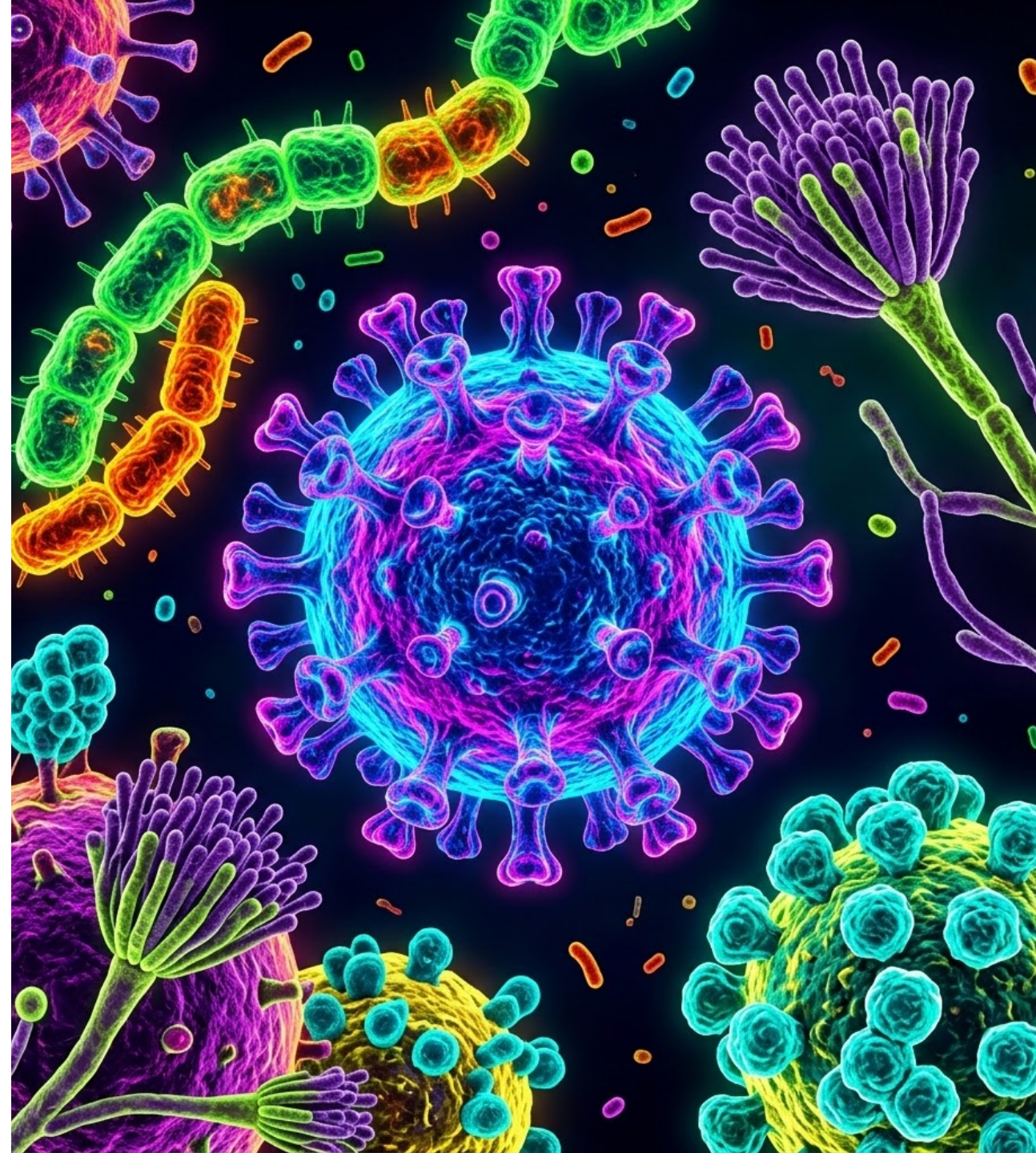
Disease Management

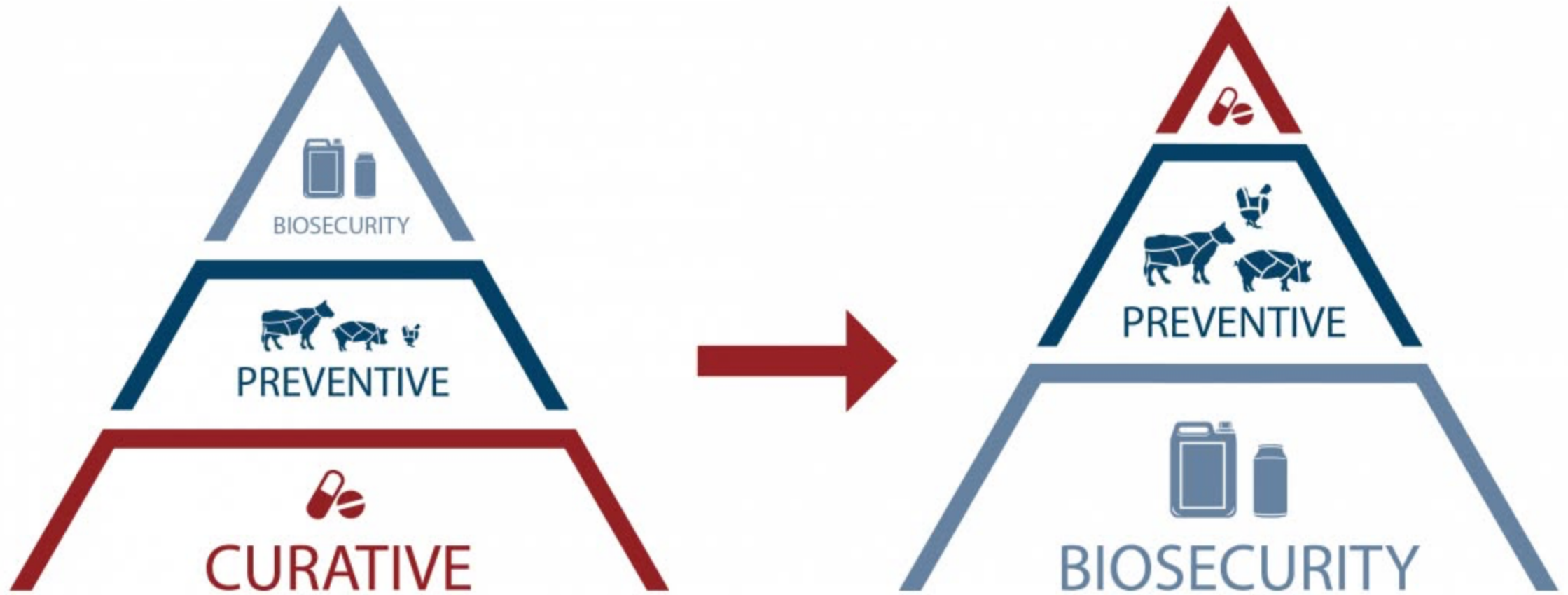
Commercial Livestock Farms

Prevention • Detection • Control

A systematic framework for herd health, biosecurity, and cost mitigation.

LIONEL'S







The Disease Triangle



PATHOGEN

Biological Threat Vectors:

- Viruses & Bacteria
- Internal/External Parasites
- Fungi & Spores



HOST

Animal Vulnerability:

- Immune status & Age
- Nutritional adequacy
- Stress levels & density



ENVIRONMENT

Farm Surroundings:

- Sanitation & Hygiene
- Airflow & Ventilation
- Water quality & Temperature

Disease only occurs when a virulent Pathogen encounters a susceptible Host in a favorable Environment.

The Strategic Goal



Keep Animals Healthy

Maintain baseline herd vigor and biological resilience against endemic challenges.



Protect Performance

Sustain daily weight gain, egg production, milk yield, and optimal Feed Conversion Ratios (FCR).



Reduce Treatment Costs

Minimise therapeutic chemical usage, emergency veterinary bills, and medication dependencies.



Prevent Avoidable Losses

Eliminate catastrophic mortality events and hidden subclinical financial leaks.



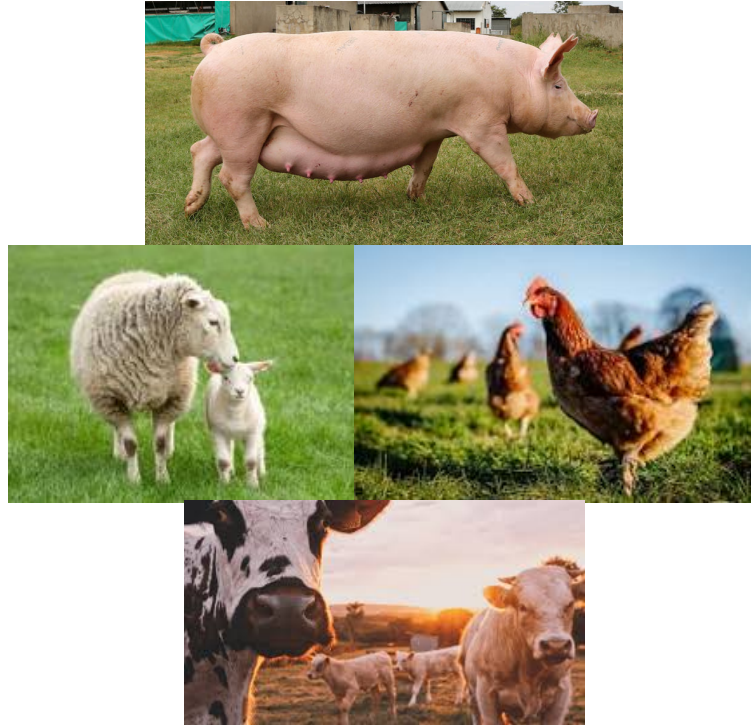
The Invisible Force...

The Hidden Risk...



Water

Prophylactic Treatment



Biosecurity

Pest Control



Water: The Forgotten Risk



Monitor Water Quality: Test source and drinker water routinely for total microbial counts.



Control Biofilm: Flush lines regularly to strip bacterial biofilm growth inside supply pipes.



Clean Tanks & Lines: Sanitise holding tanks and waterlines between production batches.



Disinfectant Performance: Poor water quality directly influences product performance

Clean Water = Dramatically Lower Microbial Challenge





Water Quality & Pig Performance



Clean Water Delivers

- Encourages consistent water consumption
- Supports digestion & nutrient absorption
- Maintains healthy gut function
- Improves growth performance
- Reduces stress during disease challenges
- Supports immune function



Poor Water Quality Causes

- Reduced feed intake
- Lower daily weight gain
- Digestive disturbances
- Increased disease outbreaks
- Poor medication & vaccine responses



Biofilm Inside Waterlines

Biofilm is a layer of bacteria, fungi, minerals, and organic material that gradually accumulates on the inside of drinking water pipes. Once established, it becomes a persistent, hard-to-remove source of contamination.



- Protects harmful bacteria from disinfectants
- Continuously contaminates drinking water
- Serves as a reservoir for disease-causing organisms
- Can block nipples and drinkers
- Reduces water flow throughout the system

Common pathogens can survive within biofilm and continuously challenge pig health.





The Importance of Chlorinating Waterlines

Routine chlorination is one of the most effective methods of controlling microbial contamination within water systems.



Prevents biofilm development



Breaks down existing biofilm



Reduces bacterial contamination



Delivers cleaner water to every pig



Lowers disease pressure



Improves overall herd health

Indirect Gut Health Benefits:

Fewer harmful bacteria entering the gut · Lower bacterial challenge to the intestine · More stable microbial balance · Better nutrient absorption · Reduced antibiotic use & AMR pressure



Stop Disease at Farm Gate

-  **1. Prevent Entry:** Enforce strict perimeter barriers to keep external pathogens off the property entirely.
-  **2. Prevent Spread:** Isolate housing units, equipment, and age groups to contain internal movement.
-  **3. Detect Early:** Track subtle production dips to catch health issues before clinical signs appear.
-  **4. Respond Quickly:** Deploy immediate containment and treatment protocols at the first sign of trouble.





WHAT IS BIOSECURITY?



A **COMBINATION** of measures taken to reduce the risk of introduction and spread of diseases onto farms, in the herd, region, country, worldwide

- ***External Biosecurity:***

Measure to prevent the introduction of disease

- ***Internal Biosecurity:***

Measure to reduce the spread of disease between animals on farm/site



Biosecurity Protocols

External Biosecurity

Control what enters the farm borders:

- Quarantine incoming animals
- Sanitise visitor & staff entry
- Disinfect delivery vehicles
- Secure feed storage from rodents & birds

Internal Biosecurity

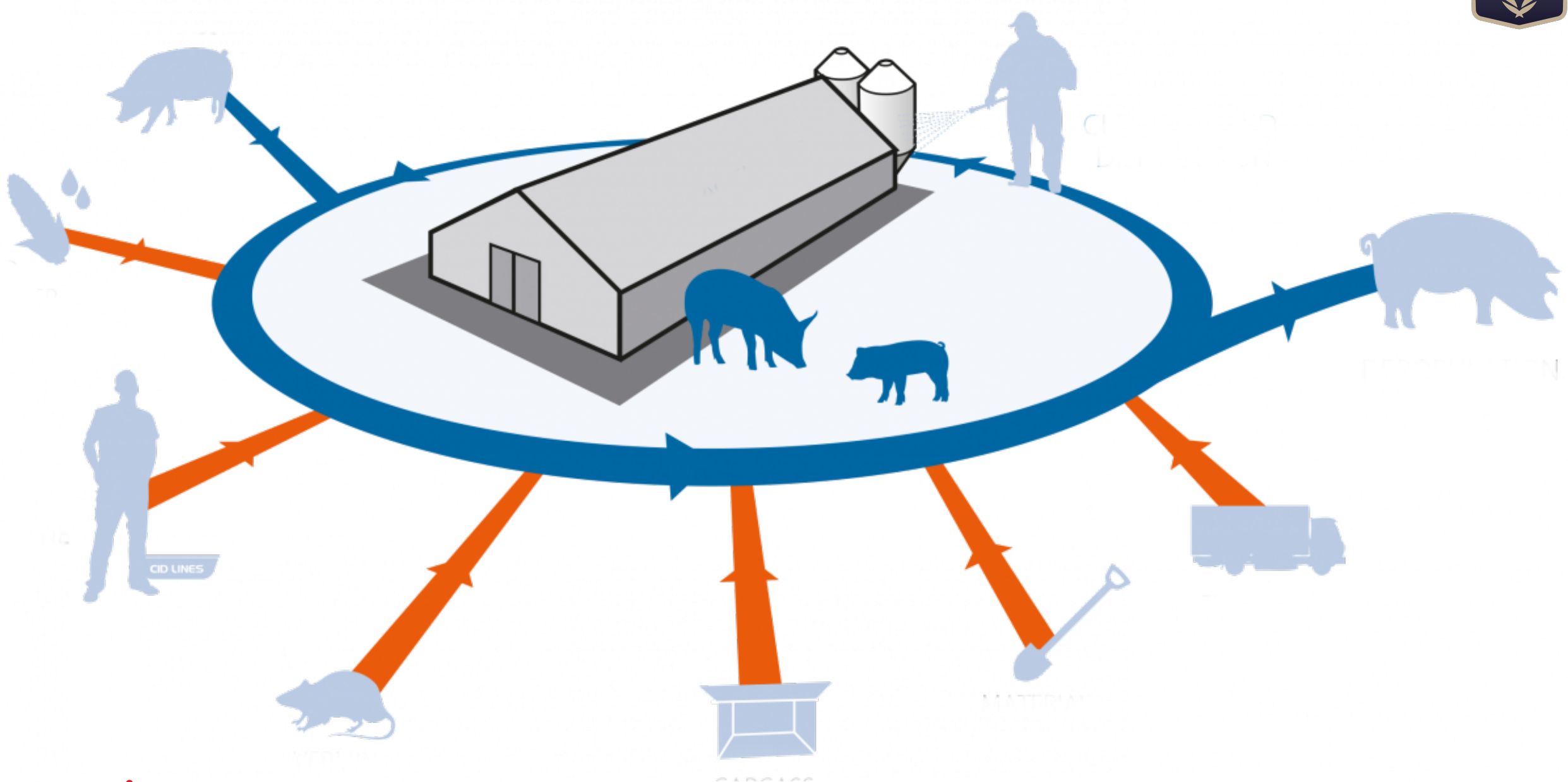
Control movement inside farm borders:

- Strict age-group separation
- Dedicated boots & clothing per shed
- Sanitise tools between facilities
- Strict All-In / All-Out production flow

Key Daily Question: "How could a pathogen enter or spread across this farm today?"



BIOSECURITY IN ACTION





WHY USE A SOP?



STANDARD OPERATING PROCEDURE

OUTLINE ALL WASHING AND DISINFECTING PROCEDURES

- **ENTRANCES**
- **SHOWERS**
- **BOOT DIPS**
- **WASHING OF HOUSING FACILITY**

BE VERY SPECIFIC, INCLUDE DILUTION RATES AND PRODUCT NAMES



Animal Housing Facilities

STEP	ACTION	PRODUCT	DILUTION	EQUIPMENT
1	- Remove all manure and dirt manually	N/A	N/A	Spades Brooms Scrapers
2	- Apply detergent “dry” (Evenly spread, cover all surfaces - Foaming pot/high pressure foaming lance) - 10-15 min contact time - Do not let dry	KENOSAN	1%	Foaming Pot or High pressure foaming lance
3	- Rinse with pressurised water	Chlorinated water	N/A Save Water	Hosepipes
4	- Let dry - Do not contaminate from unwashed areas	N/A	N/A	Squeegee (DO NOT USE MOPS)
5	- Apply disinfectant on dry surfaces (Evenly spread, cover all surfaces - Foaming pot/high pressure foaming lance) - Leave to dry	VIROCID	0,5%	High pressure foaming lance or Spray method

Frequency: **When animals are removed before new batches are placed**

Compulsory

PPE must be worn at all times: (Decanting and while using chemicals)

- Gloves
- Goggles
- Boots



IMPORTANCE OF SIGNAGE



SIGNAGE

KNOWLEDGE IS POWER

- **Make visitors aware of the sensitivity of your operation**
- **Post instructions throughout your farm/facility**



**DO NOT
ENTER!**

**BIOSECURITY
ZONE**



DO NOT ENTER!

BIOSECURITY ZONE



HOW DO I CALCULATE CHEMICAL USAGE?



CALCULATIONS:

- **1lt of diluted product per 4m²**
- **DISINFECTANT @ 1% (1:100)**
 - **10ml (product)/1lt (water)**
- **10m x 5m = 50m²**
 - **What about the walls?**
 - **(50m² x 3 = 150m²) ÷ 4 = 37,5lt (water needed to wash 150m²- includes walls/roof)**
 - **37,5 ÷ 100 = 0,375lt Product**



SECTION 1 — HOUSE DIMENSIONS

Parameter	Value	Unit		Notes
Length (m)	10,00	m		Long axis of the house
Width (m)	5,00	m		Short axis of the house
Average Wall Height (m)	3,00	m		Floor to eave height
Floor Area (m²)	50,00	m²		Length × Width
Ceiling Area (m²)	50,00	m²		Same as floor
Long Walls Area (m²)	60,00	m²		2 × Length × Height
Short Walls Area (m²)	30,00	m²		2 × Width × Height
Total Surface Area (m²)	190,00	m²		Floor + Ceiling + All Walls

SECTION 2 — APPLICATION SETTINGS

Parameter	Value	Unit		Notes
Application Rate (L/m²)	0,25	L/m²		Typical range: 0.2 – 0.5 L/m²
Detergent Dilution Rate (%)	1,00	%		Product used at 1% dilution
Disinfectant Dilution Rate (%)	1,00	%		Product used at 0.25% dilution
Total Water Volume (L)	47,50	L		Total surface area × application rate

SECTION 3 — PRODUCT QUANTITIES REQUIRED

Product	Concentrate (L)	Water to Add (L)	Total Solution (L)	Notes
Detergent	0,48	47,03	47,50	1% dilution — add 1,309.8 L water to 13.2 L concentrate
Disinfectant	0,48	47,03	47,50	0.25% dilution — add 1,319.7 L water to 3.3 L concentrate

SECTION 4 — SUMMARY

Total Surface Area	190,00	m²		
Total Water Needed	47,50	L		
Detergent Concentrate Needed	0,48	L		
Disinfectant Concentrate Needed	0,48	L		

Cleaning & Disinfection

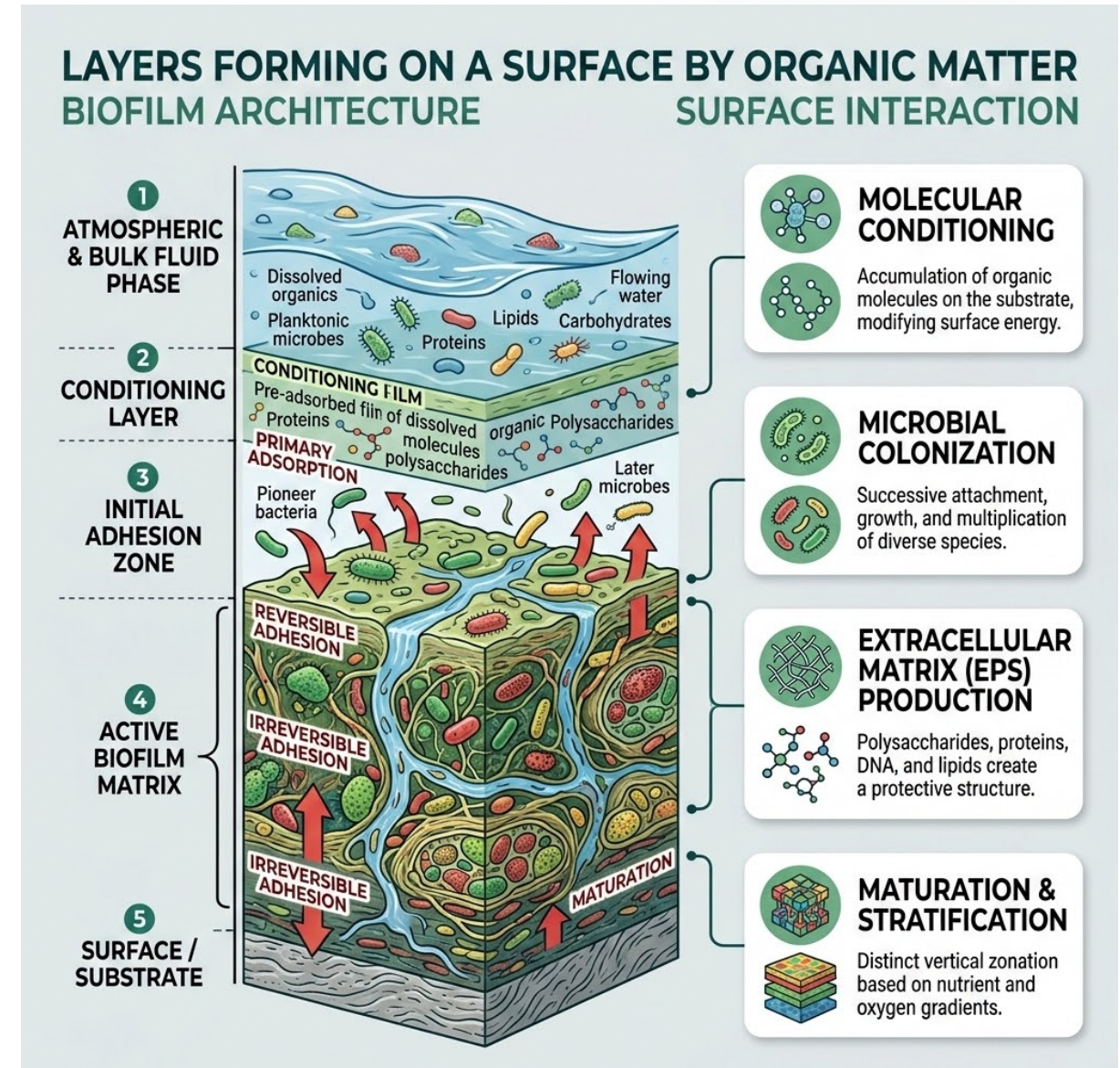
Clean First. Disinfect Second.

Disinfectants are inactivated by organic matter. Thorough cleaning is essential for chemicals to work effectively.

The 7-Step Decontamination Protocol:

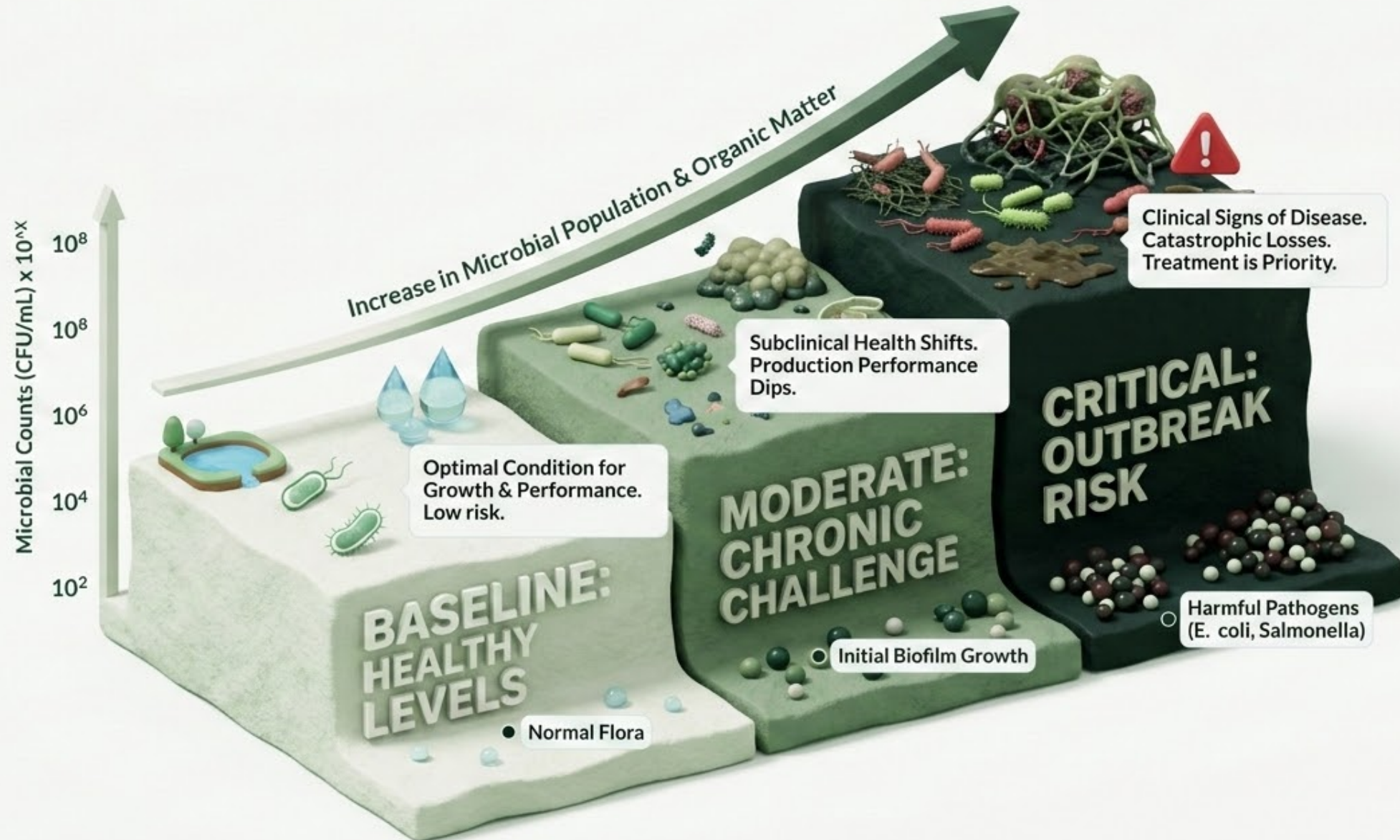
1. Deplete Animals → 2. Dry Clean → 3. Pressure Wash → 4. Rinse → 5. Dry →
6. Disinfect → 7. Verify

- **Product Selection:** Target specific farm pathogens.
- **Dilution & Coverage:** Follow exact chemical ratios.
- **Contact Time:** Allow full wet contact time.





Organic Load Contamination Levels



SCORE		0	1	2	3
1	CH 2.1 Pre Wash Front			☹	
2	CH 2.1 Post Wash Middle	☺☺			
3	CH 2.1 Pre Wash Middle			☹	
4	CH 2.1 Post Wash Middle	☺☺			
5	CH 2.1 Post Wash Front	☺☺			
6	CH 2.1 Pre Wash Front			☹	
7	CH 2.1 Post Wash Middle	☺☺			
8	CH 2.1 Pre Wash Middle			☹	
9	CH 2.1 Pre Wash Middle			☹	
10	CH 2.1 Pre Wash Front			☹	
11	CH 2.1 Post Wash Front			☹	
12	CH 2.1 Post Wash Front		☺		
13	CH 2.1 Pre Wash Back			☹	
14	CH 2.1 Post Wash Back	☺☺			
15	CH 2.1 Post Wash Back	☺☺			
16	CH 2.1 Post Wash Back			☹	
17	CH 2.1 Pre Wash Back			☹	
18	CH 2.1 Pre Wash Back			☹	
PERCENT PASS:					39%
REMARKS					

TOTAL COUNTS	SCORE	CLASSIFICATION	COMMENTS
0	0	☺☺	Specimen condition: Good MilkoLab is not responsible for sampling of any test samples.
1-50	1	☺	
51-250	2	☹	
>250	3	☹	

SCORE		0	1	2	3
1	Put Kamer – 5		😊		
2	Muur Kamer – 5	😊😊			
3	Bloubord Kamer – 4	😊😊			
4	Voerbak Kamer – 4		😊		
5	Vloer Gang kamer – 3	😊😊			
6	Rame Kamer - 3	😊😊			
7	Oranje Matte Kamer – 6	😊😊			
8	Dopey Kamer – 6	😊😊			
9	Raam Kamer – 7	😊😊			
10	Misput Kamer - 7	😊😊			
PERCENT PASS:					100%
REMARKS					

TOTAL COUNTS	SCORE		CLASSIFICATION	COMMENTS
0	0	😊😊	STERILE	Specimen condition: Good MilkoLab is not responsible for sampling of any test samples.
1-50	1	😊	GOOD	
51-250	2	😊	MODERATE	
>250	3	😞	UNSATISFACTORY	

Pest Control

?

Table 1. Diseases of swine that can be vectored by cockroaches

Disease	Disease-causing microorganism	Cockroach species	Reference
<i>Escherichia coli</i> infection	verotoxigenic <i>Escherichia coli</i> F18	German cockroach (<i>Blattella germanica</i>) 	Zurek, L. and C. Schal. 2004. Evaluation of the German cockroach (<i>Blattella germanica</i>) as a vector for verotoxigenic <i>Escherichia coli</i> F18 in confined swine production. <i>Veterinary Microbiology</i> 101:263–267
<i>Salmonella</i> infection	<i>Salmonella</i>	Cockroaches	Weigel, R., D. Barber, R. Isaacson, P. Bahnson, and Jones, C. 1999). Reservoirs of <i>Salmonella</i> infection on swine farms in Illinois. In <i>Proceedings of the 3rd International Symposium on the Epidemiology and Control of Salmonella in Pork</i> (pp. 180–183).

Nutrition & Immunity



Healthy Gut → Better Immunity → Disease Resilience



Feed Hygiene & Mycotoxins: Ensure dry feed storage. Mycotoxins suppress immune response even at low concentrations.



Nutrient Deficiencies: Balance key trace minerals (Zinc, Selenium) and vitamins (A, D, E) necessary for immune cellular defence.



Stress Mitigation: Prevent feed changes, heat stress, and overcrowding, which weaken gut barrier integrity.

Vaccination Program



Vaccination is a tool—not a standalone solution.



Correct Vaccine & Timing: Match local challenge vectors and administer at optimal maternal antibody windows.



Cold Chain Storage: Maintain strict 2°C–8°C refrigeration from factory to farm injection.



Proper Administration: Use calibrated equipment, trained staff, and correct administration routes.



Healthy Host Condition: Only vaccinate healthy, unstressed animals to ensure robust immune response.





Early Disease Detection



1st

WARNING SIGNAL

Production changes always precede mortality.

Don't Wait for Mortality

Daily monitoring of key performance indicators allows managers to catch subclinical health shifts days before visual symptoms occur.

Monitor Daily Parameters:

 Feed Intake

 Water Intake

 Growth & FCR

 Coughing / Diarrhoea

Outbreak Control Protocol



Diagnose — Don't Guess

Follow structured diagnostic steps:

OBSERVE → SAMPLE → DIAGNOSE → ACT → VERIFY

Use laboratory confirmation: Post-Mortem, PCR, Bacterial Culture, Serology, and Swab testing.

Outbreak Action Steps

- 1 **ISOLATE:** Quarantine affected houses/pens immediately.
- 2 **STOP MOVEMENT:** Halt animal, staff, and transport.
- 3 **SAMPLE & DIAGNOSE:** Call vet and collect lab samples.
- 4 **CONTROL SOURCE:** Treat or intervene directly.
- 5 **ROOT-CAUSE ANALYSIS:** Identify how the barrier failed.



KEY TAKEAWAY

Prevention is Cheaper Than Treatment

THE DISEASE MANAGEMENT PYRAMID

Biosecurity (Foundation) → Cleaning & Disinfection → Water & Feed Quality → Nutrition & Gut Health
→ Vaccination → Monitoring & Diagnostics → Treatment (Last Resort)

Manage the entire farm system — not just the sick animal.

Healthy Animals → Better Performance → Greater Farm Profit

Image Sources



https://corporate.delaval.com/wp-content/uploads/2025/03/IMG_20211006_121855-1024x461.jpg

Source: corporate.delaval.com



<https://solus-desinfectant.ca/wp-content/uploads/2026/08/solus-livestock-hero-black-bottle-v2.webp>

Source: solus-desinfectant.ca



<https://s1.kaercher-media.com/media/image/selection/86823/m2/stallreinigung-in-der-milchvieh-und-rinderhaltung.webp>

Source: www.karcher.com



<https://a.storyblok.com/f/270554/3840x2160/0aa2641fd5/cattle-drinking-water-feeders-troughs-animal-identification.webp>

Source: www.msschippers.com



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