

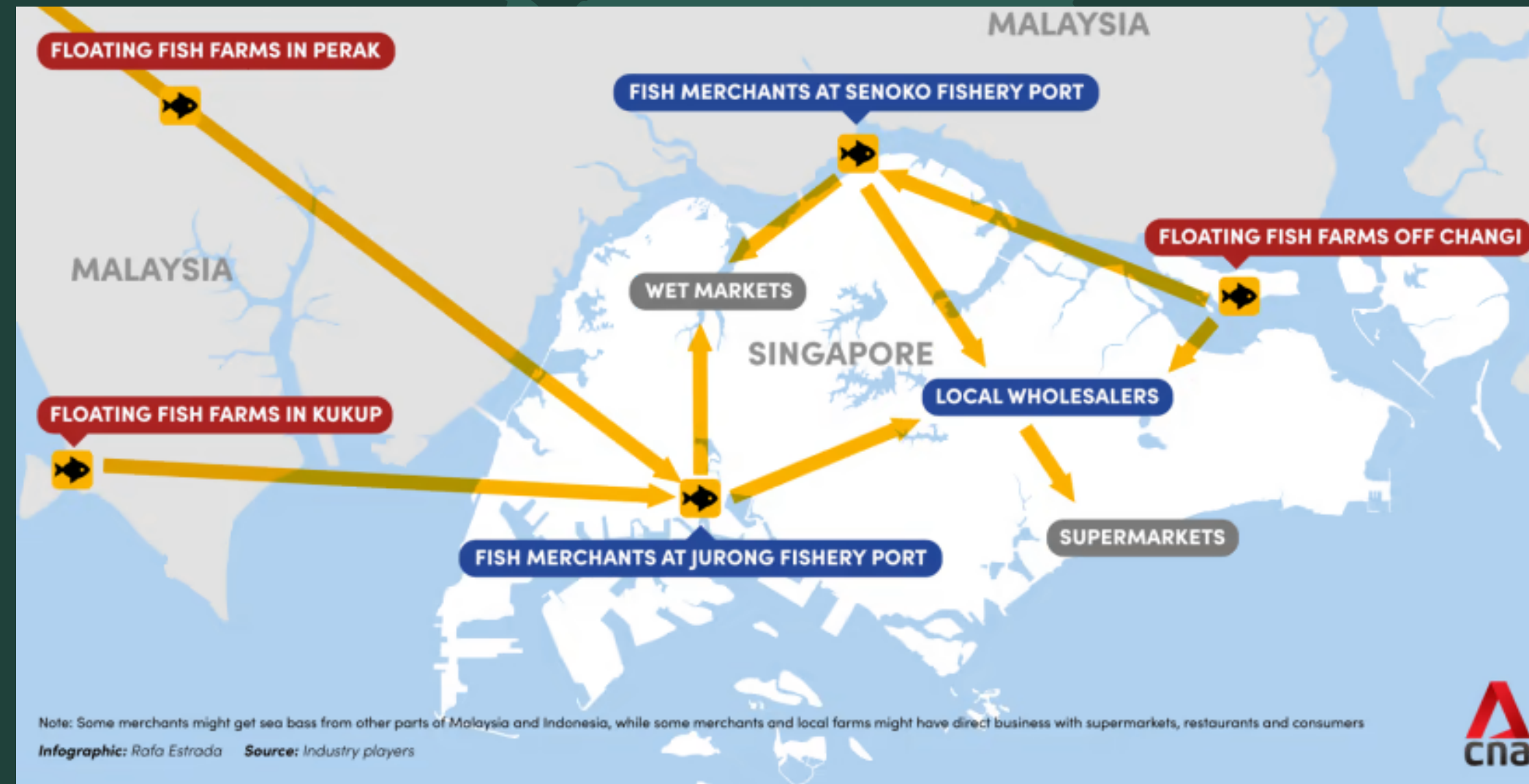


OPTIMIZING NUTRITION AND HEALTH IN ASIAN SEABASS FRY & JUVENILES

Feed, Diseases, and Diagnostics

INTRODUCTION

- Asian seabass (*Lateolabrax niloticus*) is a key aquaculture species in Singapore.
- High-intensity fish cages expose them to nutritional challenges and diseases.
- Understanding nutrition and disease prevention is crucial for successful farming.



Importance of **PROPER NUTRITION**

- Proper nutrition is crucial for the growth and survival of seabass fry and juveniles.
- Insufficient or improper feed can lead to stunted growth, poor immunity, and susceptibility to diseases.
- The right balance of protein, lipids, and vitamins is vital for optimal development.



Differences in

FRY VS JUVENILE

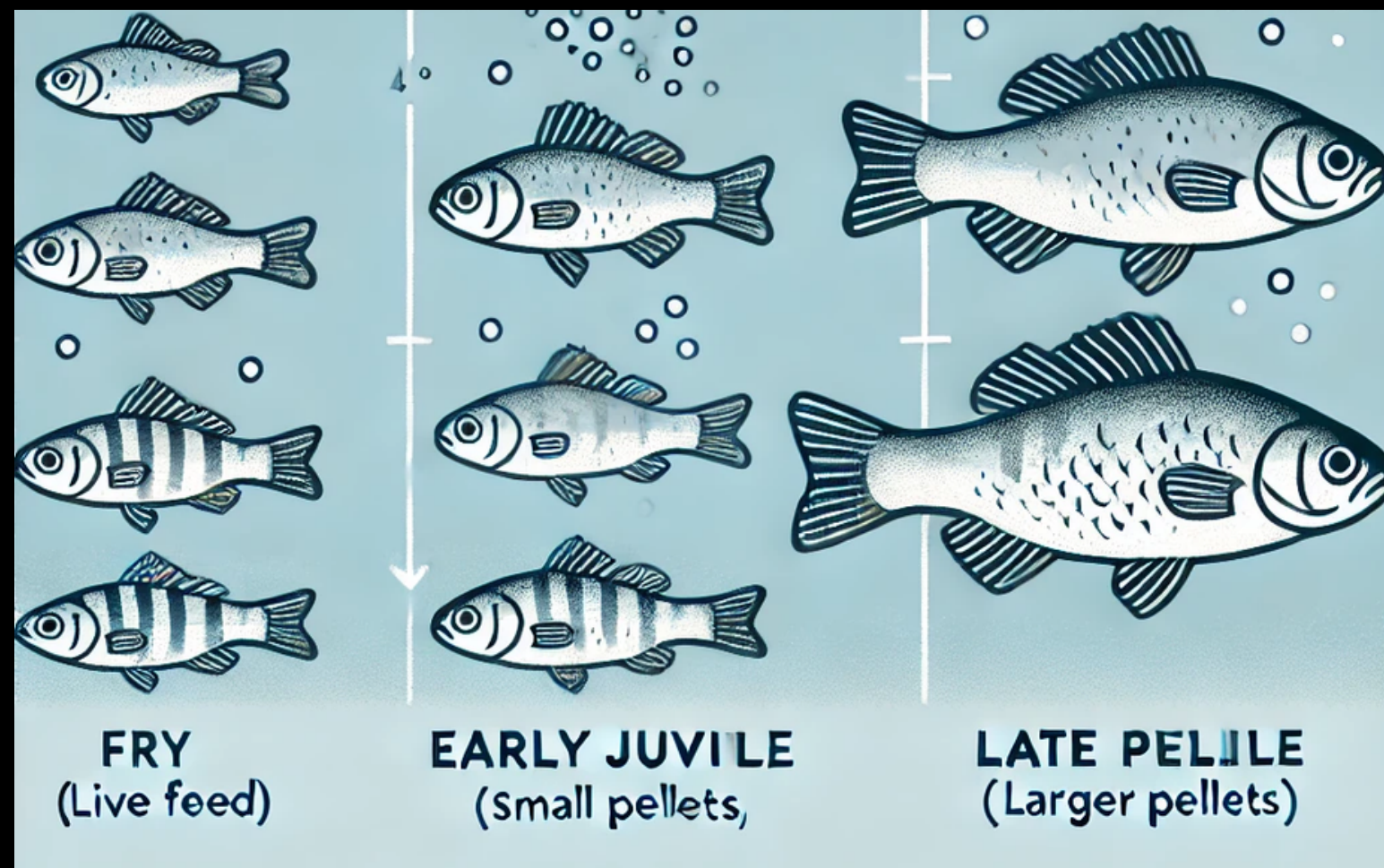
Nutrition Needs

Fry:

- Require high protein content (40–60%) for rapid growth and development.

Juvenile:

- Transition to a more balanced diet with moderate protein (30–40%) and high energy content.



The size and type of feed should vary based on age and development stage.

Types of Feed For

FRY AND JUVENILES

For Fry:

- Specially formulated micro-pellets, live feed such as rotifers or Artemia, or crushed pellets.

For Juveniles:

- Expanded pellets, granules, or formulated feeds with more fiber and moderate protein.



Adjusting pellet size and feed form ensures proper intake and digestion.

SPECIAL REQUIREMENTS FOR FEED

- Pellet Size: Must match the mouth size of the fish to ensure proper feeding.
- Feed Alternatives: Use of natural food like Artemia or plankton, especially for fry.
- Water Temperature and Feed Conversion Ratio (FCR): Affects digestion and growth rates.



Common Diseases in Aquaculture

INFECTIOUS DISEASES

Red Sea Bream Iridovirus, RSIV

- RSIV is a major viral disease affecting farmed Asian seabass (*Lates calcarifer*) in Singapore.
- It leads to high mortality rates, particularly in juvenile seabass, causing severe losses in aquaculture.

Transmission

- Direct Transmission: Infected fish release the virus into the water, spreading it to healthy seabass.
- Waterborne Transmission: The virus survives in water and spreads through contaminated water sources.
- High Stocking Densities: Overcrowded fish farms increase the risk of infection.

Symptoms

- Lethargy, loss of appetite, and slow movement.
- Abnormal swimming behavior (floating near the surface).
- Pale or darkened skin coloration.

Risk Factors for RSIV in Singapore Seabass Farms

- Warm water temperatures (common in Singapore) accelerate virus replication.
- High-density cage farming increases stress and disease spread.
- Poor water quality (low oxygen, high ammonia) weakens fish immunity.



Common Diseases in Aquaculture

NON-INFECTIOUS DISEASES

Swim Bladder Stress Syndrome ,SBSS

- Affects the swim bladder, an organ responsible for buoyancy in fish.
- Common in juvenile Asian seabass (*Lates calcarifer*), particularly in high-density fish farms.
- Caused by stress, poor water quality, and improper handling.

Causes

- Causes of SBSS in Singapore's Seabass Farms
- Sudden environmental changes: Rapid temperature fluctuations, poor oxygen levels.
- High stocking densities: Increased competition, aggression, and stress.
- Improper feeding: Feeding on floating pellets can cause excess gas intake.
- Handling stress: Rough handling during transfer can damage the swim bladder.

Symptoms

- Difficulty controlling buoyancy (floating near the surface or sinking).
- Erratic swimming patterns (tilting, floating upside down).
- Reduced feeding behavior, leading to stunted growth.
- Increased stress and vulnerability to secondary infections.

Symptoms



LOCAL ENVIRONMENTAL FACTORS

Contributing to Diseases



01

Water Quality

Temperature fluctuations, oxygen levels, and salinity can stress seabass.

02

Pollution

High levels of ammonia, nitrites, or organic waste can lead to bacterial infections and weakened immune systems.

03

Overcrowding

Increases stress and the likelihood of disease transmission.

DIAGNOSTIC TECHNIQUES

For Infectious Diseases

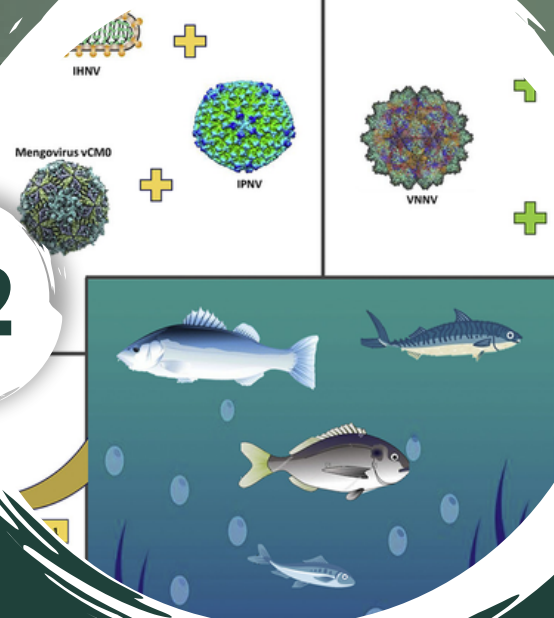
01



Clinical Diagnosis

Observing abnormal swimming behavior, skin lesions

02



Lab Diagnostics

PCR (Polymerase Chain Reaction) tests for viral infections like VNN.

03



Immunological Techniques

ELISA (Enzyme-Linked Immunosorbent Assay) for detecting antibodies.

DIAGNOSTIC TECHNIQUES

For Non-Infectious Diseases

01



Clinical Diagnosis

Look for signs of poor growth, abnormal coloration, or lethargy.

02



Water Quality Testing

Measure parameters like pH, oxygen levels, and ammonia to identify causes of nutritional deficiencies or stress.

03



Microscopic Examination

Check for parasites or poor feed quality.

PREVENTING INFECTIOUS DISEASES

Vaccination:

- Use RSIV vaccines if available to boost immunity.
- No direct treatment exists—focus on prevention.



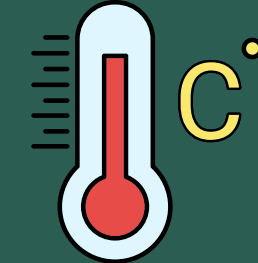
Biosecurity Measures

- Source fingerlings from disease-free hatcheries.
- Implement strict farm entry protocols (disinfection footbaths, controlled access).
- Quarantine new fish before introducing them to existing stock



Water Quality Management:

- Maintain optimal temperature (26–30°C) and salinity to reduce stress.
- Regularly monitor and improve water parameters (pH, ammonia, oxygen levels).



Early Detection & Culling:

- Watch for symptoms: lethargy, darkened skin, swollen spleen.
- Remove and dispose of infected fish properly to prevent disease spread.



Minimize Stress Factors:

- Avoid overcrowding and ensure proper feeding practices.
- Reduce sudden temperature or salinity changes.



PREVENTING NON-INFECTIOUS DISEASES

Proper Feeding Techniques:

- Feed appropriate pellet size to prevent excessive air intake.
- Avoid overfeeding, which can lead to buoyancy issues.

Water Quality Control:

- Maintain stable temperature, oxygen levels, and pH balance.
- Reduce excessive aeration that may cause supersaturation.

Stocking Density & Handling:

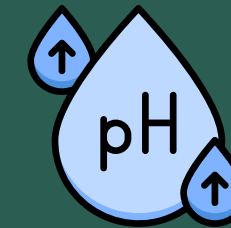
- Avoid overcrowding to minimize stress and pressure on the swim bladder.
- Handle fish gently during transfers to prevent injury.

Preventing Barotrauma:

- Gradually acclimate fish to changes in depth and pressure.
- Avoid sudden transfers between deep and shallow waters.

Observation & Intervention:

- Watch for abnormal swimming patterns (floating or sinking).
- If affected, isolate fish and adjust feeding or water conditions.



SINGAPORE FOOD AGENCY (SFA) & NPARKS

Diagnostic Support

- The SFA provides diagnostic services for both infectious and non-infectious diseases.

Key Services:

- PCR testing, antibody detection, water quality analysis, and microscopy.
- Farmers can send samples of affected seabass fry and juveniles to the SFA or Nparks for thorough disease screening.





CONCLUSION & KEY TAKEAWAYS

- Proper nutrition, disease prevention, and diagnostic techniques are vital for the success of seabass farming.
- Maintaining good water quality, proper feeding practices, and early disease detection can prevent major losses.
- Collaboration with agencies like SFA can aid in managing farm health effectively.

