

# Best Practice in Freshwater Aquaculture



# About Me

- \* Have been in the aquaculture industry for 28 years
- \* Worked commercially in marine and freshwater farms
- \* Have been an industry trainer and consultant
- \* Now have own training/consulting company and manage a large freshwater fish farm in Queensland

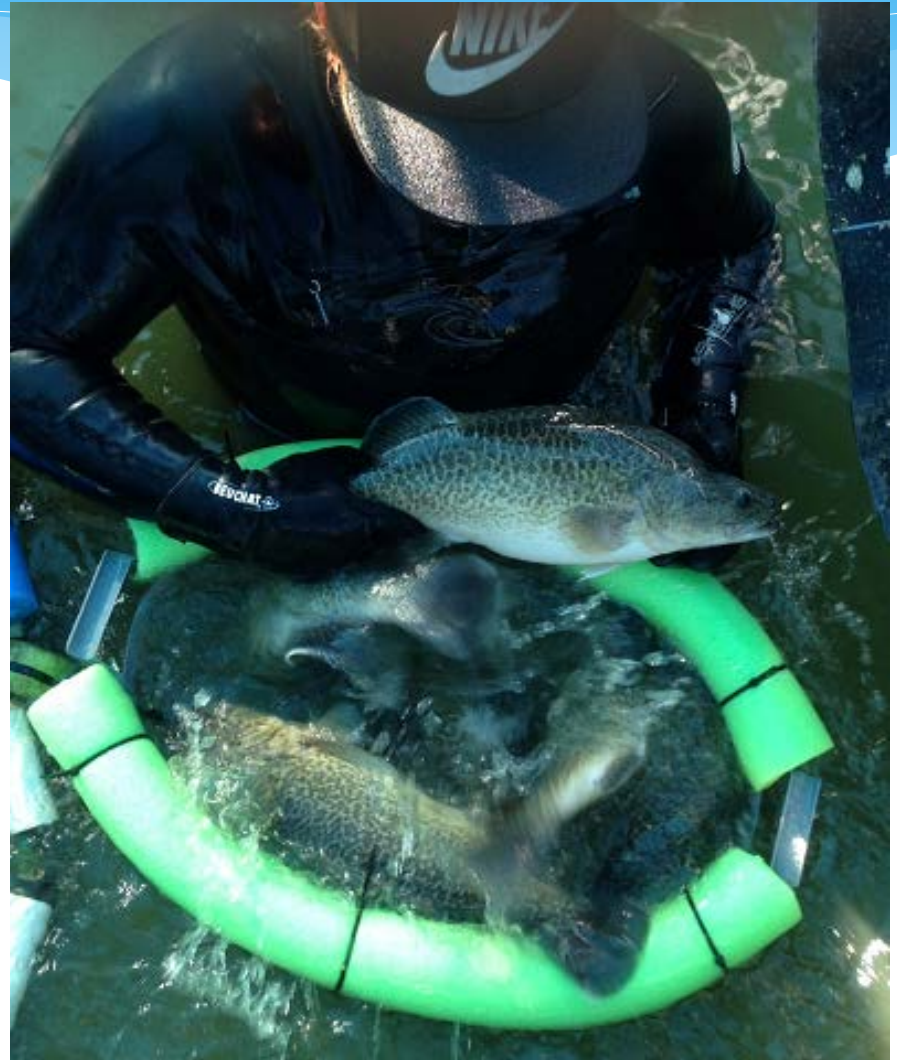


# What is Best Practice

- \* *Commercial or professional procedures that are accepted or prescribed as being correct or most effective.*
- \* *What does that mean in an aquaculture environment?*
- \* *Can we have some examples?*
- \* **YOU NEED TO MAKE YOUR FARM AS BORING AS POSSIBLE!!!!**

# Three Pillars to Best Practice in Aquaculture

- \* Water Quality
- \* Feeding and Nutrition
- \* Health Management
- \* Most other things fall into place if you have perfected those three areas.



# Water Quality

- \* It is extremely important.
- \* Apart from feed it is the single largest limiting factor to productivity and fish growth.
- \* It very often can be the difference between profit and loss in a commercial facility.
- \* Knowledge of how to **manage** water quality (not just read a meter) is essential!
- \* What do I mean by *manage* water quality?



# Water Quality

- \* Best practice for water quality starts with developing a monitoring program which includes actions.
- \* You have to develop plans that outlines what, when and where you are going to monitor water quality.
- \* It also needs to address data management and what actions you need to take.
- \* The best programs have thresholds and reporting regimes.



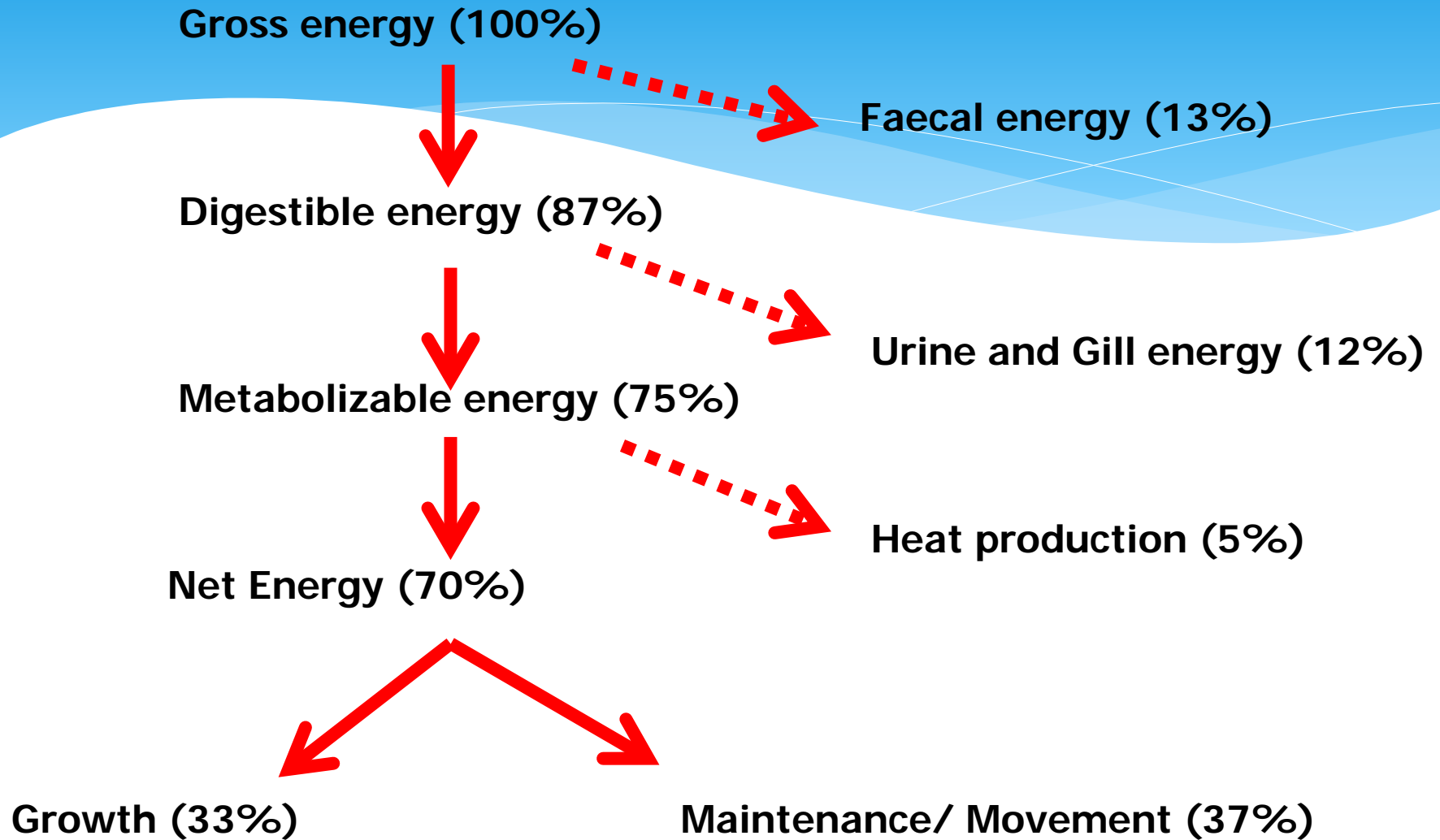


# Best Practice - Feed

- \* The largest component in commercial production costs – can be more than 50%.
- \* The main driver of growth and biogain.
- \* Where the commercial facility should spend the majority of its time and focus looking at :
  - \* Feed and growth rates.
  - \* Feed cost.
  - \* Feed quality and performance.



# Energy Usage

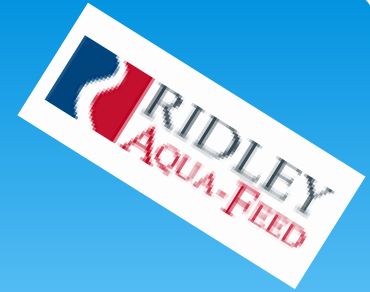


# Best Practice - Feeding

- Like water quality, you need a good feeding program which focuses on:
  - Improving Food conversion Ratio (FCR)
  - Optimising feeding strategies
  - Developing a historical data set so you can effectively predict current and future requirements. Feed targets etc
  - Maintaining good water quality
  - Meet environmental and wider licence requirements
  - Makes the farm **PROFITABLE**

The logo for SKRETTING, featuring the word "SKRETTING" in a grey sans-serif font next to a red circular graphic with a white swoosh.

# Feed Companies



- \* Always have at least 2 feed suppliers to compare results and create competition.
- \* Rely heavily on feed companies for technical support and other ways they can help your organization.
- \* Keep samples of each batch you buy.
- \* Be clear what you require from your feed suppliers :
  - \* “I want a diet that will give me the lowest cost of production”, not
  - \* “I want a low cost diet”

The Cargill logo, featuring a green leaf-like shape above the word "Cargill" in a bold, black, sans-serif font.

# Health Management and Biosecurity



# Health Management and Biosecurity

- \* No other single factor in commercial aquaculture has the potential to disrupt the business more than disease.
- \* Catastrophic infrastructure failure events can devastate a farm also, however unlike rebuilding infrastructure, a breach in biosecurity can introduce pathogens to your stock that may be virtually impossible to eliminate from your facility, even after a total dry out.
- \* Estimated that the global aquaculture industry loses three billion dollar losses per year due to disease issues.



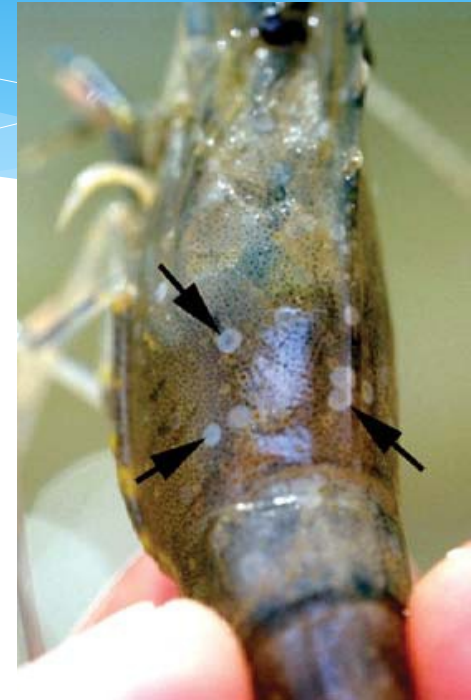
# The Costs of Disease

- \* Managing disease comes at a cost, however it has been proven on many occasions not managing diseases comes at a higher cost. Some costs are listed below:
- \* Farm level
  - \* biosecurity measures (incl. possible vaccination)
  - \* Increased wages for surveillance
  - \* treatment
  - \* infrastructure
  - \* training



# The Impact of Disease

- \* At the farm level:
  - \* Stock loss
  - \* Decreased ability for feed intake
  - \* Decreased ability to digest feed
  - \* Decreased growth rate
  - \* Decreased biomass for sale
  - \* Limits flexibility in production
  - \* Immunosuppression of stock
  - \* Negatively effecting any genetic improvements
  - \* Possible zoonotic infections
  - \* Animal welfare issues

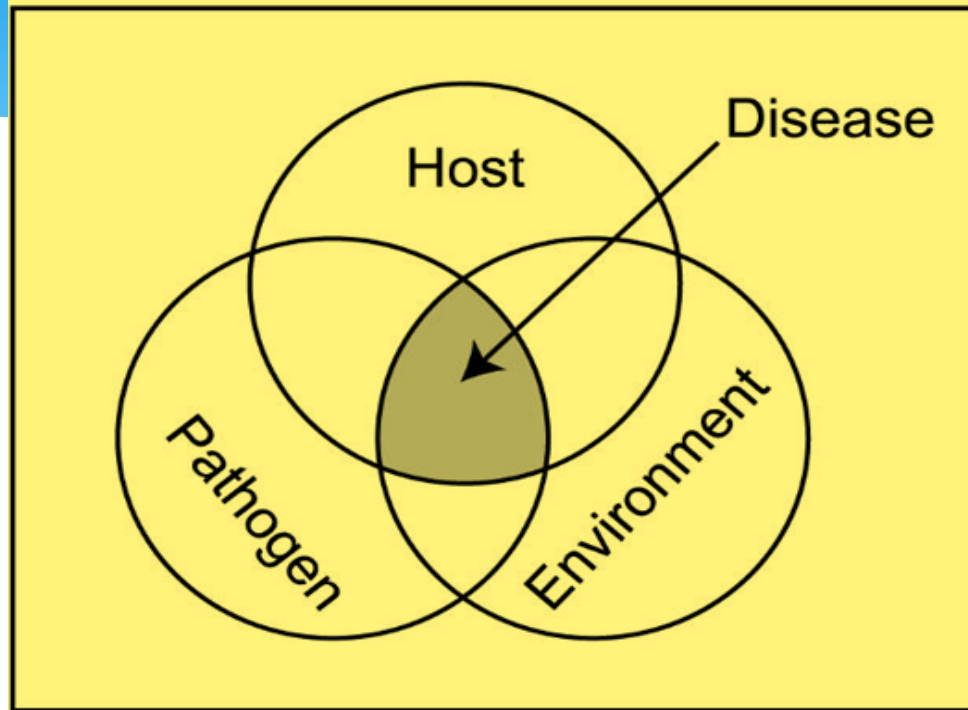


# The Impact of Disease Cont.





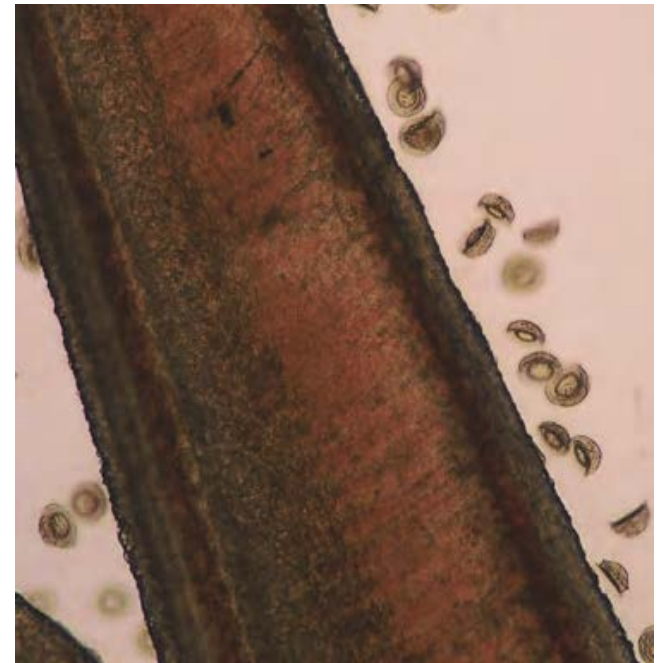
# This Image is Important!



Disease prevention and control must involve maintaining or improving environmental conditions

# Disease and Systems Management

- \* As a minimum you need to have the knowledge and skills to:
- \* Know what to look for (clinical signs of disease) – Knowing both visual cues and normal behavioural traits are crucial.
- \* When to look for it (targeted surveillance) – This comes from quality data management. Some diseases are more prevalent at certain times of year or at certain life stages.
- \* Monitoring (sampling) and what to do when a problem is observed. Having and following standard procedures and work instructions makes health problems more manageable which in turn allows for more rational decision making processes.
- \* What to record (data management) – A farm without a quality data management system is always battling to optimise its production. This is also the case with health management. Having a range of relevant historical health data allows you to plan and implement continuous improvement.
- \* Thresholds are a good example





# Biosecurity – Best Practice

- \* Biosecurity is the other part of best practice health management. It defined as *Preventing the introduction, establishment and spread of unwanted biological organisms or agents*
- \* Biosecurity has three goals in the commercial facility
  1. Minimise the likelihood of introducing an unwanted pathogen
  2. Undertake robust monitoring so that pathogens will be detected if they enter your system
  3. Ensure an appropriate response to disease events by controlling their spread and eradicating disease agents

# Biosecurity Key Planning Areas

- \* Animal management—how you obtaining healthy stocks and optimise their health and immunity through good husbandry
- \* Pathogen management—preventing, reducing or eliminating pathogens
- \* People management—educating and managing staff and visitors

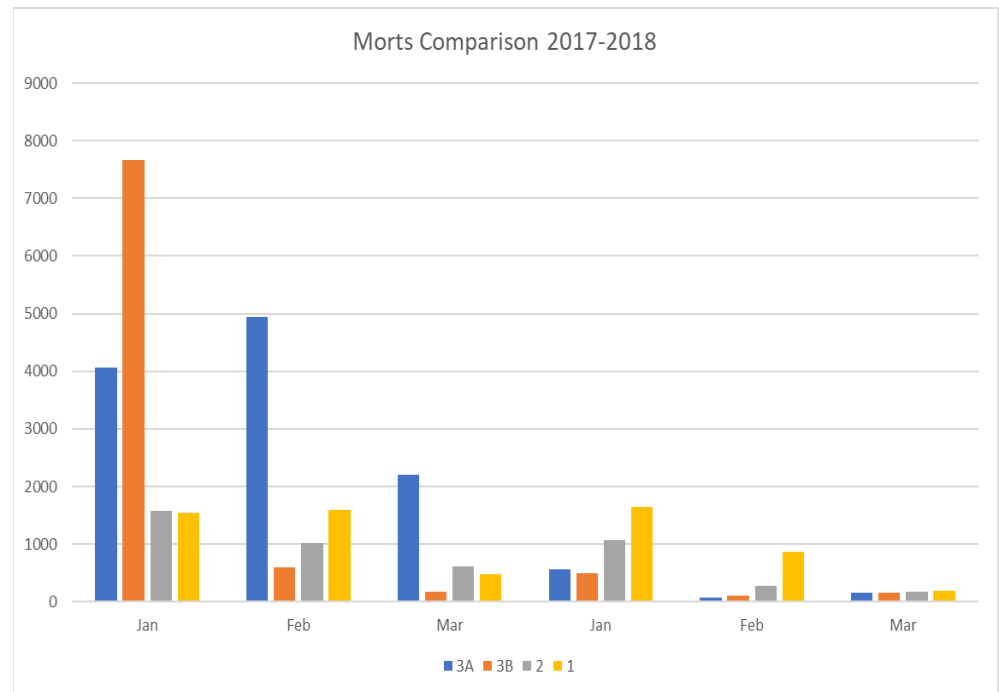
# Biosecurity Balance

- \* The farm has to be fully ready for biosecurity breaches
- \* Governments should meet their biosecurity obligations
- \* Sometimes they fail – Australia and whitespot virus is a good example.

# Innovation and Best Practice

- \* What is innovation in commercial aquaculture?
- \* A new idea, device or method?
- \* It also can be changing your business model and adapting to changes in your environment to deliver better products or services.
- \* Can all areas of innovation be classed as best practice?

# Examples Where Innovation is Not Best Practice





# Examples Where Innovation is Not Best Practice



Previous FCR FCR March 2017	Current FCR FCR March 2018
1.7	1.1
1.4	1.2
1.5	1.2
1.6	0.8
1.8	0.9
1.9	1.5



# Examples Where Innovation is Could be Best Practice

