Centralized analytic software?
Yes,
an analytic software, centralizing data from connected devices, can facilitate real-time decision making and more…for Prawn Farmers

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Smart Farming at Australian Prawn Farmer Association 2018 Conference
Gold Coast August 13-15, 2018
Introduction

1.

Prawn Farmers in Australia have tens of years of experience.

“Aquaculture prawn farming began in the 1980’s with most farms being located on flat land adjacent to sea water sources, such as tidal rivers or creeks (…)

Being a farmer is high risk, capital-intensive, site specific and requires technical expertise. You must be prepared to work long hours and must be able to understand and manage sudden changes in conditions that can occur at any hour of the day or night. Managers must have a firm hand on risk management, marketing and liaison with various government bodies.” Source: http://apfa.com.au/prawn-farming/

In 2018, Australian prawn farmers have around 35 years of experience and… 35 years of data. These data are a valuable part of these prawn farmers experience to help them taking best decisions…but…

How to get everything synthetized on time?
Introduction

2.

These more or less sudden changes can be:

- Environmental: climate change, intake water quality evolution,…
- Biological: genetics, feed formula changes,…
- Technical: density increase, recirculation, aeration,…
- Market: sizes, seasonal demands, price volatility,…

“Old” and present available tools to analyze historical and present data are becoming less and less efficient to mitigate risks associated to these changes and optimize productivity in a changing world because:

- With so many accumulated years, there are probably too many data to synthetize and to analyze properly, on-time,
- “Acceleration” of all these changes require quicker and more often wise decisions.
### Data sampling & recording

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### Reporte de Siembra

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</table>

### Observaciones

- A. B. 4.4 kg (14.00 m x 1.40 m) 45 kg
- A. B. 4.4 kg (14.00 m x 1.40 m) 45 kg
Data sampling & recording
Data storage
Data storage
Data reporting on tables, on walls... to both analyze data & transmit instructions to pond staff
Data reporting on spreadsheets in numerous files
Data reporting on large spreadsheets becoming harder to fully analyze in real time
Data reporting on spreadsheets in numerous files...

Excell errors: How M’s spreadsheet may be hazardous to your health or to your prawn health...

Millions of Excel spreadsheets are used in medicine, science, economics, and finance. Yet up to 90 percent have serious -- even life-threatening -- errors. Here’s what you need to know and how they could improve Excel.

By Robin Harris for Storage Bits | July 25, 2017 -- 12:09 GMT (5:09 PDT); Topic: Microsoft

Research has found that up to 90 percent of all spreadsheets have errors that affect their results. I’ve written about the Harvard professors whose basic Excel mistakes led to untold misery for millions of people.

If you search for spreadsheet errors, you’ll get lots of stories other than the Harvard fiasco.

- Hiding cells -- instead of deleting them -- cost Barclays bank millions during the 2008 meltdown.
- A cut and paste error cost TransAlta $2 million.
- Another cut and paste error cost JP Morgan $8 billion when a Value at Risk model was miscalculated.

There are many more, but you get the picture. Errors are so common that there’s a 15-year-old spreadsheet risks interest group.
Need of a professional software, customized to prawn farms!

- Which software?
- Designed by who?
- Is it evolving?
- Can I customize it?
- Is there a hotline?

The key is:

Be selective in the software designer and supplier.
Need of a professional software, customized to prawn farms!

What for?

1. **On immediate term:**
   - Reduce risks of human errors in data entry and in data calculation and reporting;
   - Reduce delays between ponds and decision makers: time from data measurement at ponds (day and night) to data availability for decision makers and backwards to ponds for action;
   - Supply priority lists of critical ponds for selected key criteria (DO drop, disease early signs, reduced growth, etc…) to save time in data analysis.

2. **On medium and long terms:**
   - Adjust stocking, feeding and harvesting strategies based on historical data analysis
   - Use prediction models to optimize pond management
   - Benchmark with regional and international producers
How a fully designed Prawn Farming Software works …

**FARM OPERATIONS**

- Farm Performance KPI's
- Environmental
- Feed Management
- Feeding System
- Health Data

**DATA PLATFORM**

- Decision Support
- Live Dashboard
- Precision Aquaculture Team
- Input Selection (genetics, probiotics)
- Feed Management (nutrient formulation, delivery)

**ANALYTICS**

- Performance Analysis
- Yield Protection

**DECIDE**

- Certification
- Lab & Diagnostic Support
- Software HelpDesk
- Feed Suppliers
- Insurance

**COLLECT**

**ANALYZE**
Key Productivity Index: example of weekly Growth

A Typical Data Management Process in large farms:

- On Tuesday: pond staff notes pond data (primarily growth sample) on paper (+ some hand calculations)
- On Tuesday evening: data logged into spreadsheet and reported to Biologist
- On Wednesday: data is analyzed and decisions made
- On Thursday: management decisions are executed.

Data management execution is 1 to 2-day process
- For 20 weeks cycle, there are 20 decisions/cycle
- Potential to lose 20 to 40-days of feed management decisions on sub-optimal ponds/cycle:
  - This represents 14 to ≥ 25% of cycle

Fast situation reporting, accurate decisions & fast executions across a typical production cycle result in saving time spent on data management and analytics. This leaves more time studying critical and sub-optimal situations to define solutions on both immediate and longer term.

More decisions per pond per growth cycle
- 20X

More efficient use of time of key decision makers which include biologists and farm managers
- up-to 28%

Better growth potential per prawn per cycle due to faster reactivity on sub-optimal conditions
- up-to 2g

Current →

0 10 20 30 40 50 60 70 80 90 100 110 120

Software →

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Phase I is already real
Phase I is already real

To succeed phase I, training of all involved people is determinant
Phase I is already real

To succeed phase I, training of all involved people is determinant
+ giving sufficient time for human transition of digital transformation
Thank you for your attention

What was simply a dream until a few years ago has become possible and real: phase I is complete and now moving to phase II in several key prawn farming countries worldwide.

Thank you to the people who have contributed to this presentation through their work in Learning, Designing, Testing, Developing, Teaching…and Using iQuatic

https://www.cargill.com/animal-nutrition/species/aquaculture/products/iquatic