New Zealand King Salmon

Ruben Alvarez - MPI Site Relocation Presentation

APRIL 2017

NZ King Salmon

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Ruben Alvarez

- Aquaculture Bachelor Degree, Antofagasta University, Chile
- Degree in Business & Administration, Austral University, Chile

CAREER HISTORY

1988 - 1995: Unilever, Marine Harvest- Chile varying production positions in Salmon Farming

1995-1997: Unilever , Marine Harvest, Scotland, Area Manager, Hatcheries, brood stock, fry and smolt production , first RAS system in Europe

1997-2001: Nutreco, Marine Harvest Production Director for all fresh water operations, Brood stock , eggs, fry, and smolts, including Genetics, Health and the Biosecurity department.

2002 -2004: Technical Director for Nutreco Global in Stavanger, Norway (Ireland, Scotland, Canada , Norway and Chile)

2004- 2011: Production Director, Marine Harvest Chile , all production from eggs to harvest, primary processing plant . 120,000 tons per year of Pacific Salmon, Trout and Atlantic Salmon. Rebuild MHC from ISA crisis in 2006

2011 – 2012: Supply Chain director NPC. (power plant, desalination plant, purchasing department, ware houses, customs, cold store, processing new equipment)

July 2012 -January 2014: Director of Fish Business unit for NPC, Hatcheries , grow out, harvesting and processing, for 3 Business units, Saudia Arabia (Amberjacks, Sea Bream, Sea Bass, Barramundi, Groupers, Seacucumber). North of Sudan (Tilapia), Mauritania (Amberjacks , Sea Bream, mussels)

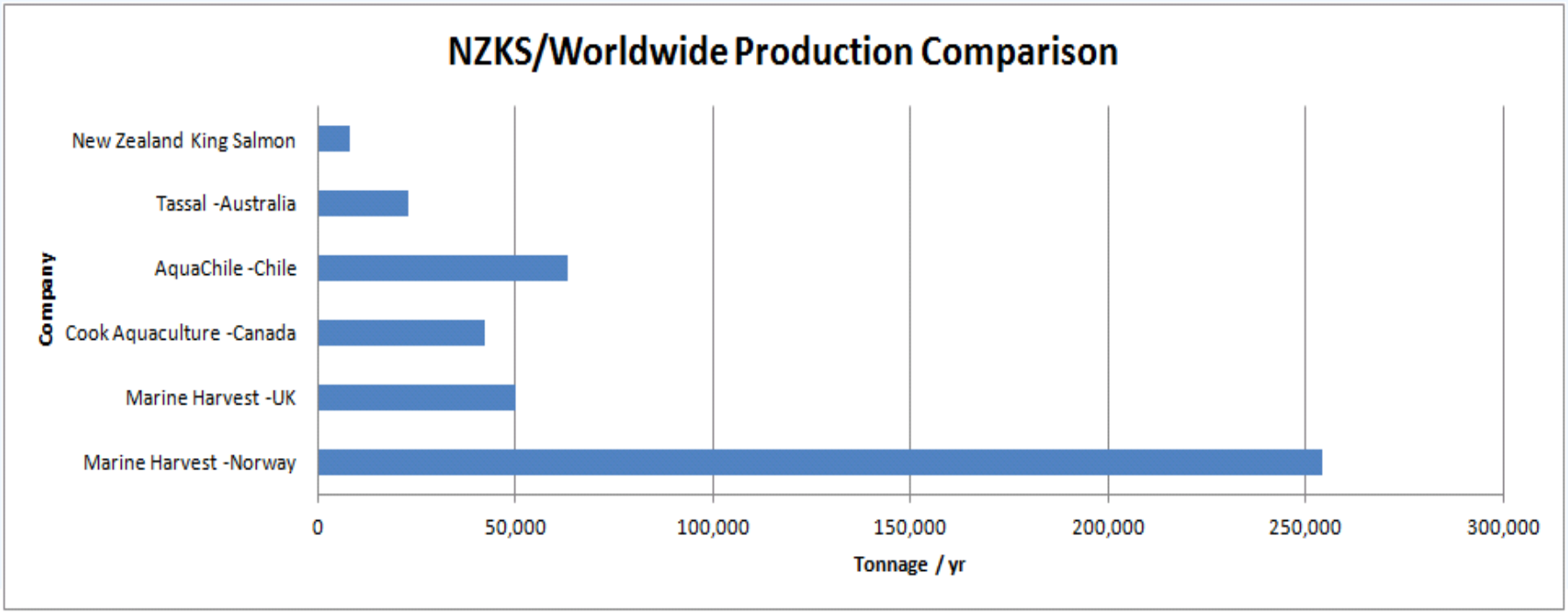
March 2014 until present: C.O.O for NZKS

Aquaculture in New Zealand - Comparison with overseas

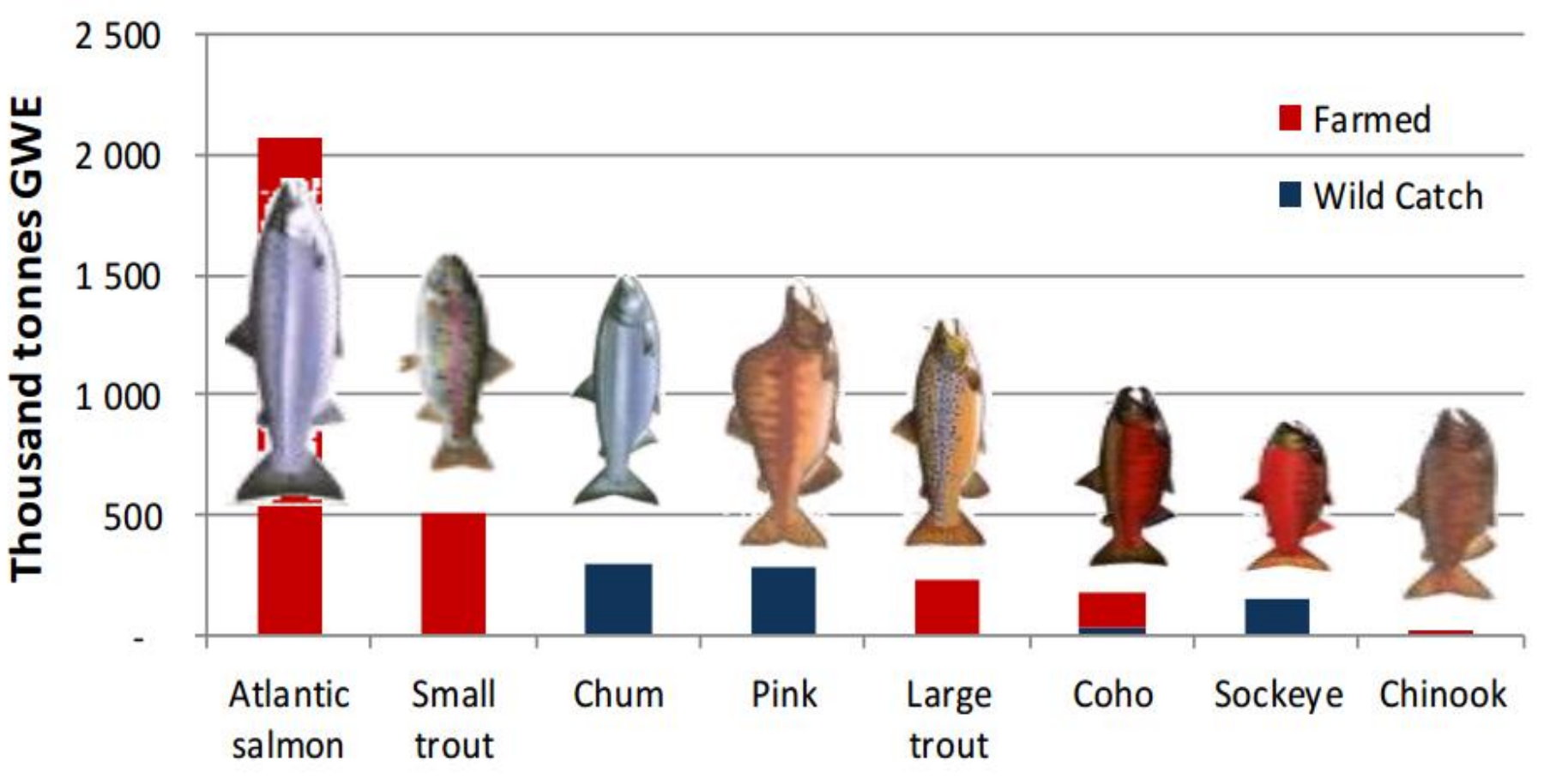
- NZ produced **0.6%** of the salmon harvested in the world in 2016
  - Figures taken from -Salmon Farming Industry Magazine, Marine Harvest 2016.

- The Salmon market has increased by 6% in the last 10 years and 8.6% in the last 20 years
  - Information from -Kontali Analysis. Proves that the market is continuing to grow.

- New Zealand's production of Salmon is smaller than that of the smallest companies in Norway and Chile



Worldwide Salmonid Production Comparison -
Farmed vs Wild



International Opportunities

There are limited areas to grow Salmon in the world due to the need of low Sea Water temperatures and good sea current (good O_2 levels) :

Northern Hemisphere:

- USA
- Canada
- Faroes Island
- Scotland
- Norway
- Japan
- Russia

Southern Hemisphere

- Chile
- Australia
- New Zealand

Future Offshore Farming:

Beck Cage

marineharvest

The projects Marine Harvest has applied for:

- "The Egg" – Closed sea-going units
- "Beck-cage" – Submersible offshore farming cage
- "Marine Donut" – Closed-containment cage
- "Converted bulk ships" – Closed tanks

Marine Harvest told 'no' on Beck cage offshore concept, as 'donut' progresses

March 3, 2017, 9:39 am

Neil Ramsden

Norway's directorate of fisheries has confirmed offshore salmon concepts by Marine Harvest's and Norway Royal Salmon (NRS) fall within its criteria for development licenses, giving them the greenlight to proceed to the next stage of discussion.

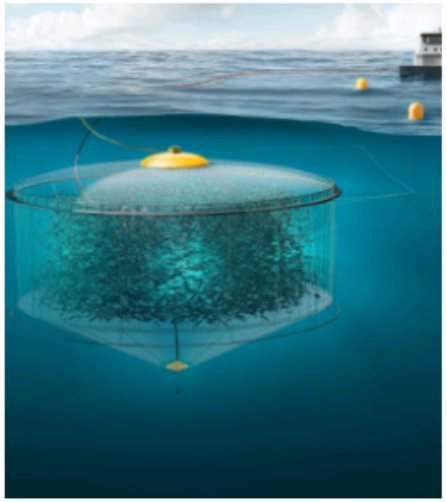
However, while Marine Harvest's 'donut' concept has been approved for further dialogue, the 'Beck cage' concept has been turned down.

In a letter to Marine Harvest the directorate listed numerous technical reasons why it felt the Beck cage concept application did not meet its strict requirements, including a lack of clarity on the proposed cages' dimensions, and how they would supply the fish with oxygen and feed.

One concluding paragraph of the letter states: "the applicant has not described the concept, the status of the project or how the project will meet innovation requirements in an adequate manner."

Future Offshore Farming: Atlantis Subsea

Akva told 'Atlantis Subsea' offshore salmon concept viable for development license



AKVA's Atlantis concept

Share

Stagnant volumes, rising costs push AKVA, Marine Harvest offshore

Akva sees land-based tech earn first real profits

AKVA achieves best-ever fourth quarter results

Akva forms new subsidiary, applies for salmon development licenses

November 28, 2016, 9:13 am

Undercurrent News

Norwegian authorities have confirmed that the Akva Group, Sinkaberg-Hansen and Egersund Net joint venture, Atlantis Subsea Farming, falls within the scope for awarding development licenses.

The directorate will now consider the submersible farm concept further with a view to awarding one or more licenses, said Akva.

The company applied for six licenses when it formed Atlantis early in 2016.

Akva will be required to provide further details of its plan, including target financial criteria for the concept, it said.

Also on Nov. 28, Marine Harvest found out its egg concept could be in line to receive four development licenses.

If both projects were given the go-ahead, they would become the second and third such R&D projects allowed in Norwegian waters, after SalMar's NOK 690 million investment, Ocean Farming.

Future Offshore Farming

Converted bulk ships

Marine Donut - Developed by OPD

Marine Harvest in new application to farm salmon on converted cargo vessel

June 3, 2016, 2:53 pm

Ross Davies

Marine Harvest is planning to use converted cargo ships to produce salmon in closed tanks.

The Bergen-based group -- the world's largest producer of Atlantic salmon -- has applied to the Norwegian Directorate of Fisheries for six development licences for technology, to be implemented onboard an old Panamax bulk as part of a pilot project.

In total the ship will have the capacity to farm 950,000 salmon, divided between the six tanks used as a salmon pen. The fish tanks will have a combined volume of around 65,000 cubic meters, while a final hold will be used to store feed and other necessary equipment.

Future Offshore Farming

OFFSHORE FISH FARMING – A NEW ERA!

Ocean Farm 1 – the world's first offshore fish farm

Ocean Farm 1 ushers in a new era in the history of salmon farming. It is based on the best that the Norwegian aquaculture and offshore technology sectors have to offer, and resolves many of the issues relating to sustainable growth that the aquaculture industry is facing.

The installation is currently under construction in China, and will be positioned in Frohavet, off the Trøndelag coast, in the second half of 2017. Ocean Farm 1 is a full-scale pilot facility, where many aspects of offshore fish farming will be tested out.

Dimensions and facts
Height: 68 m
Diameter: 110 m
Volume: 250,000 m3

Facts :

- First offshore fish farm
- Multidisciplinary team , great expertise
- PILOT farm under construction in China
- To be installed in the second half of 2017
- PILOT farm is going to be tested

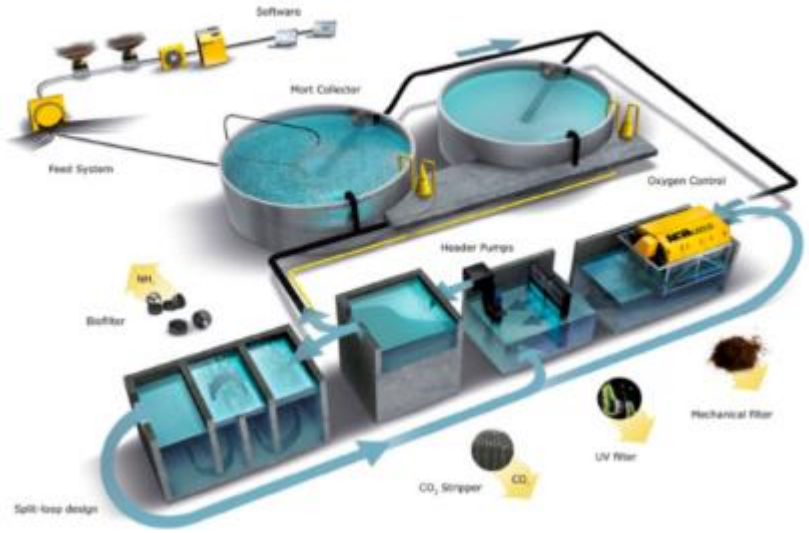
Projects partners

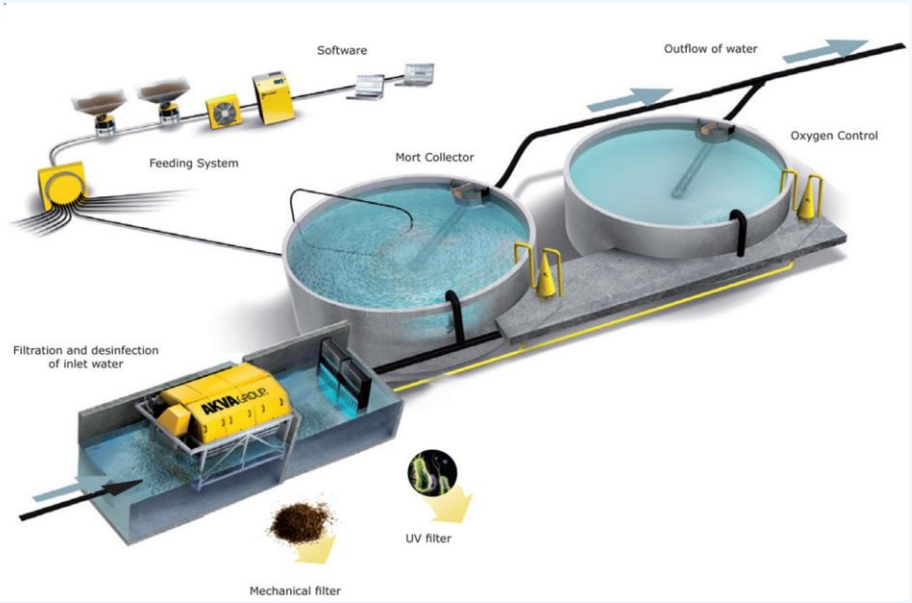
Global Maritime AS	Design and systems integration
Kongsberg Maritime AS	Electrical installations and instrumentation for marine and fish handling systems
Mørenot Aquaculture AS	Hull outfitting, nets and moveable bulkhead arrangement
Malm Orstad AS	Drive system for moveable bulkhead
Emstec GmbH	Equipment and systems for fish transfer
Graintec AS	Equipment and systems for receipt and distribution of fish feed
Optimar Stette AS	Equipment and systems for handling dead fish
Pump Supply AS	Equipment and systems for net cleaning
CSIC QWHI	Hull construction and installation of marine systems
DNV GL/Noomas	Third-party verification and certification
MARINTEK	Model testing and associated analysis
Sintef Fiskeri- og havbruk AS	Environmental data and calculation of currents
FugroOceanor AS	Environmental data and wave calculations
Ramnäs Bruk AB	Mooring chain
Lankhorst Euronete S.A.	Fibre ropes
Farstad Offshore AS	Installation mooring system and fishfarm

Land Based Systems (Flow-through freshwater & closed containment systems)

INTENSIVE RECIRCULATING AQUACULTURE SYSTEMS (RAS)

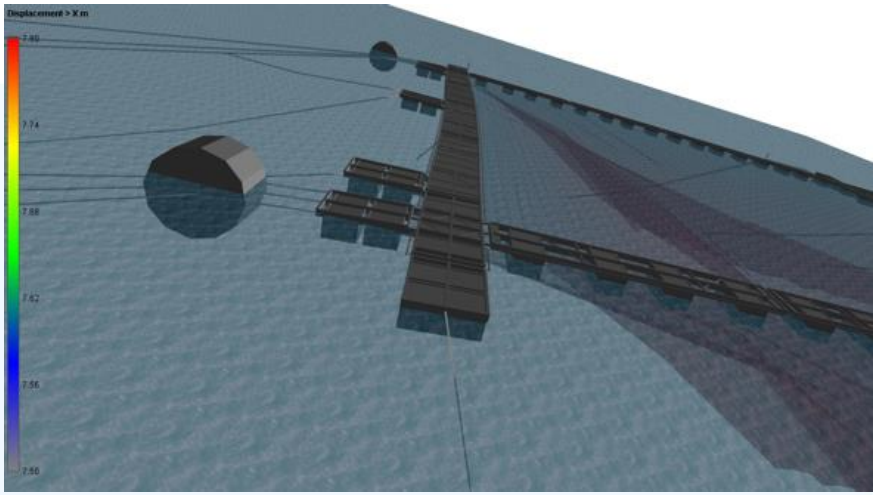
FLOW THROUGH FRESHWATER





Recirculating Aquaculture Systems (RAS) reuse the water many times, passing the water through treatment processes to remove waste and to restore water quality.

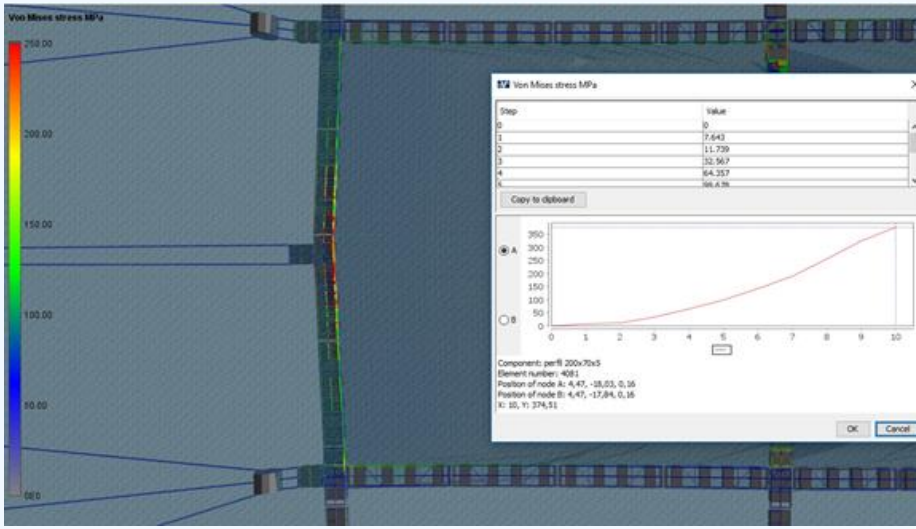
Risk Management



Selecting the right pen as per farm condition

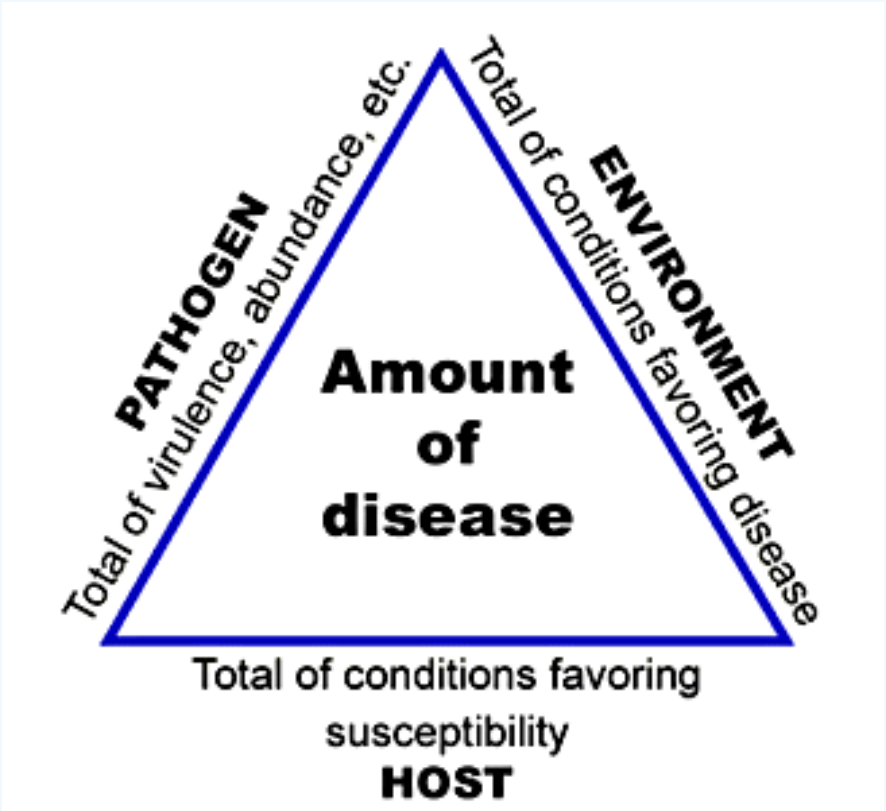
Modeling moorings using powerful software

NZKS has developed a tensiometer to control and monitor the tension of each mooring



Diseases

1. **Low risk of diseases in NZ due to no eggs importation since 1900**
2. **Small farms , no many players 6 companies in total well spread**
3. **King Salmon is naturally resistant to sea lice infestation**



Processing Area , key numbers

	Primary Processing	VAP	Hot Smoke	Cold Smoke
Number of People employed	24	115	21	86
Tons per year G&G	7,900	1460 = Fillet 926 = Portion	497	1,300
Number of SKU's produced per year	34	77	21	31
Number of shifts in operation today	1	Portion 3 Filleting 1	3	Packing 2 Smoking 3
Max production capacity with 3 shifts	30,000	2700 =Portions 14200 =Filleting	596	1,900

Processing Area : Team & Equipment

Processing Area : Team & Equipment

Processing Area : Our Products

NZKS CERTIFICATIONS

Legal certifications to operate:

•**MPI RMP** – Ministry of Primary Industries certification to operate a "Risk Management Programme" to sell product to the New Zealand market and export;

•**MPI Export Licence** – Ministry of Primary Industries certification to allow us to export products;

Status certifications

•**Kosher** – Certification of foods that conform to the regulations of kashrut (Jewish dietary law)

•**Halal** – Certification of food prepared in accordance of Muslim law.

Customer driven certifications

•**BAP** – Best Practice Aquaculture certification against prescribed standards set out by Global Aquaculture Alliance. We hold three stars covering hatcheries, farms and processing;

•**WSE** – Woolworths Supplier Excellence certification where suppliers must meet prescribed standards to supply certain produce to Woolworths

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RUBEN ALVAREZ - MPI SUBMISSION

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