Camanchaca Oct 2018

AquaGen

Agenda

- 1. The past
 - What happened
 - The lessons learned
 - New trends for a more stable future
- 2. The future from AG perspective
 - New QTLs
 - New species



THE BOOMING PERIOD

The Chilean salmon industry had 20 years of healthy growth During 1995-2006 Chile was amongst the most competitive global salmon producers



THE BUSTING PERIOD

- Since 2007, Chile has been living a long sanitary, commercial & financial crisis.
 Initially triggered by Caligus.
- Industry output varying from 400 to 850 k tones/year; high unpredictability
- Cost increasing from USD 2.3 to up to 4.5/kg....a very severe competiveness loss.
- Increased use of antibiotics and anti parasitic chemicals



Ex-Cage Cost [USD/kg WFE]

Chilean Salmon Industry Evolution

2015, HIT ROCK BOTTOM WE TALK AND COLLABORATE GOVERNMENT + INDUSTRY PLAN TO RECOVER INDUSTRY COMPETITIVENESS

By mid 2015, government and industry started working in a plan to :

- Understand what went wrong
- Recover industry competitiveness
- Guarantee sustainable sanitary condition for salmon production





WE HAVE LEARNED!!





WE CHANGE REGULATORY MODIFICATIONS Regulations are being adapted according to a new industry/government understanding

New Regulations

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WE THINK LONG TERM **AQUACULTURE INVESTMENT IN R&D** From USD 7 to 20/30 million/year

Programa para la Gestión Sanitaria en Acuicultura -----

Fondo de Inversión Estratégico (FIE) Sernapesca Industria salmonicultora

APORTES PROYECTO PGSA - CENTRO DE ENFERMEDADES





\$ USD 14,8 millones /

Fecha inicio: 2015

4 años

\$ USD 14 millones / 8 años Fecha inicio: 2013





CONCENTRATION IS REDUCED NEW OPERATIONAL AREAS: REGION XII



Expansion to region XII

- Around 10 times lower concentration of farms
- Better sanitary status: ISA, SRS and Caligus almost absent
- Production to level off by 2020

		Region	
	X	XI	XII
Shoreline	230	270	1000
Licenses	507	715	126
Operating farms	100	120	40
Farms/km	0,43	0,44	0,04
Pathogen/parasites			
SRS	Yes	Yes	No
Caligus	Yes	Yes	No
BKD	Yes	Yes	Yes

Harvest Region XII (ktons/year)





WE DEVELOP NEW MARKETS Coho: a distinctive species for Chile

- Market developments in Coho:
 - Mostly exported to Japan but recently new markets have been developed such as Russia, China and Brazil
 - Mostly exported HG frozen but now fillets are being produced
 - Harvested almost continuously for 7 months/year
 - New markets accept larger fish significantly decreasing production cost (almost double weight in 3 to 4 months)
 - Around 30% of the current harvest never treated with antibiotics



Agenda

- 1. The future from the AG perspective
 - □ The potential for genetics
 - Investment on r&D: new QTLs
 - New species
 - The most difficult challenge ahead



Breeding work and Value (%) creation from the Chilean salmon farming in 2017 (Atlantic salmon)



Genetics in salmon farming today represents an investment, at origin, of only around 0,36% of the value reached by the final product

Genetic resistance to SRS in Atlantic salmon via QTL (24 million smolts tested in 18 commercial farms 2017-2018)



Mean and standard error of cumulative SRS mortalities on QTL SRS populations.



Atlantic salmon: Fast Growth genetic line Validation under commercial conditions: GF3





Genetic resistance to SRS in Coho via QTL

Beneficios esperados de la selección por el marcador QTL SRS- Coho



In 2018 15 million Coho smolts carrying the SRS QTL are being tested in 6 different companies.

RPS normal vs selected population: 25%



New product: New Genetics, immune to Caligus



- From 35 k fish initial population, there are 400 12,5 kg females (17 months in SW) that are expected would spawn after 2 years at SW
- FOUNDATIONS FOR AN
 ATLANTIC SALMON LIKE
 COHO.... but better



Remarks and Summary

- The industry (mostly) has learned and implemented change in the regulations, the market and the behavior towards the future
- No further uncontrolled growth must be expected.
- Genetics and breeding represents the most efficient tool to tackle industry challenges: cost, welfare, predictability and sustainability.... it is only matter of investment and patience
- Visible Risks: Caligus and disputes within the industry
- In summary a challenging road ahead but clear rules and collaboration is of essence

