



STRANDBÚNAÐUR 2018
Triplid production –experience so far
Stein Ove Tveiten

Arctic Fish



- Founded in 2011
- 36 employees
- Biggest owners is Norway Royal Salmon ASA

Sea Farm:

- First generation salmon 2017, Dyrafjördur
- Licenses in Dyrafjördur, Patreksfjördur and Talknafjördur

Smolt:

- Built up a new smolt facilities Talknafjördur
- Water treatments, hatchery, start feeding and 2 grow-out departments
- 6000 m3 grow-out finished summer 2018, the last step is under planning and will give us at the end 16000 m3.
- The last step depends on the production capacity at sea





What is triploid salmon:

- A common fish is diploid, it has a set of inherited material from each parent.
- In order for the salmon to be triploidisation, new fertilized eggs must be exposed to high pressure for a few minutes.
- The pressure means that part of the mother's inheritance remains in the egg. In this way, a triploid fish gets two sets of inherited maternity material from a father, which makes it sterile.
- This is the most common way to do it today

Why triploid salmon:



Main reason is to reduce possible impact of escape

- Pressure treatment on the eggs are a “well known” method that was developed at the 80’s and used also on trout in Scotland and Tasmania
- The method has been revitalized in Norway the last 5-6 years
- Companies has done commercial testing on triploid salmon since 2012
- In 2014 Norway Royal Salmon get 10 new “green” licenses where a major part was based on usage of triploid salmon and several defined farming methods.
- A struggle between the veterinarian authorities and the fishery authorities. Difficult to get a long term approval and commitments on the production from the veterinarian authorities.
- Triploid salmon defined as a new species...

Scientific tests:



(Updated report from FHF, 11 feb 2016)

- Both post smolt and adult triploid performed better than diploids at low temperatures and worse at high.
- The results also show that the possibility of errors that can cause deformities, cataracts or poor growth performance seems greater than in the production of common diploid salmon.
- For good performance with triploids, it is important to have good access to histidine to avoid cataracts.
- For satisfactory bone structure it is important that the available phosphorus in the lining is high enough, especially in the period between 3 and 10 grams is critical.
- *These results show that it appears to be possible to produce triploid salmon with as good a result as regular diploid salmon, but it is important that the production adapts to this salmon their special needs throughout the life cycle, says Kjell Maroni, Fagsjef in FHF as have been following the project*



Field observations in Norway:

Seawater (SW):

- Decreased mortality in sea year by year
- More fish lice (Skotte lus) at the triploid has been connected to that the depth. The triploid seems to swim deeper and under the lice skirts!?
- Minimal difference in growth between diploid and triploid
- Better tolerance for low levels of oxygen then expected
- Minimal challenges with cataract

Freshwater (FW):

- Biggest mortality and difference at yolk-sack phase in FW
- More challenging start feeding
- Higher amount of poor fish in early phase in FW
- Low amount of deformities in FW
- Low mortality after 5 grams



Focus areas in triploid productions

- There is a need of a predictable production regulation – not a profession struggle between authorities and departments
- Triploidisation – process/methods
- Roe quality – improvements has to be done
- Smolt quality – better control on the smoltification
- Feed consumption – secure right levels of Phosphor and Histidine in the right periods
- Mortality in SW – focus on skin health (handling, stock management, nutrition etc.)

Triploid productions in the future?



- Yes we think so, but...
- Not a “straight-forward-production” compared to diploid fish.
- We have some knowledge now about the triploid production, but still need for more.
- The risk can be higher with triploid than diploid for how it looks now, especially when it comes to fish health and welfare. But we see improvements year by year.
- My opinion is that is important to have a “fundament” with diploid fish to minimize the potential higher production risk and cost with triploid fish.



Triploid salmon production in Iceland?

- We are still in a start phase in Iceland. As far I can see we have not proven any sustainability yet.
- Still in the „golden years“ when it comes to price achievements. Production cost showing now, in Iceland, is higher than the average price the last 10 years.
- I great need for investments in knowledge, equipment, biomass and infrastructure to reach a sustainable and critical production level.
- Are we as a company/governments/stakeholders willing to take higher risk in the production, to reach these levels?

Thank you for your attention!



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