Resistance against PD

Pancreas Disease (PD), caused by Salmonid alphavirus (SAV), has for many years been one of the most costly diseases affecting salmon farming. In recent time there has been recorded a positive trend of a reduction in the number of PD outbreaks. Based on efficacy data from both laboratory and field trials QTL-innOva IPN/PD will make an important contribution to the continuing fight against PD.

Development of QTL-innOva IPN/PD

AquaGen has utilised challenge data from both field and laboratory, to identify and document gene markers with effect against PD. Gene markers that have been identified to date are not like the simple and strong IPN-QTL, but used in combination they will give a considerable increase in resistance to PD for fish. Our analysis also showed that among the three strongest QTL's associated with PD protection we find the IPN-QTL. Based on the findings of QTL searches and subsequent documentation from laboratory infection trials (Figure 2), the product QTL-innOva IPN/PD was launched in the market in the egg-season 2010/11.

Field documentation – evaluation of effect

In order to evaluate the effect of QTL-innOva IPN/PD in the field, we have, from autumn 2011 had a close follow up on a total of 19 sites with nearly 8 million salmon. All of the sites are situated in areas known historically for a high infection pressure with SAV. Of the 19 follow-up sites, 15 had previously experienced clinical PD outbreaks.

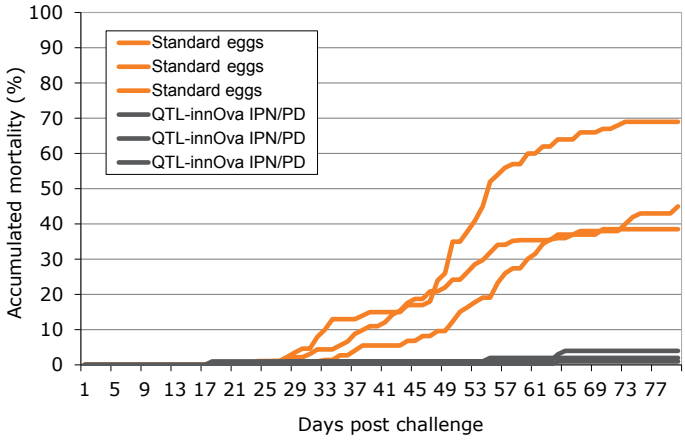

Figure 1. Preliminary efficacy studies of QTL-innOva IPN/PD using waterborne infection. All parallel groups of fry derived from parents selected based on gene markers associated with IPN and PD resistance (grey line), showing significant reduction in mortality compared to standard fry groups without QTL.

Products with PD resistance:

- AquaGen® Atlantic QTL-innOva® IPN/PD
- AquaGen® Atlantic QTL-innOva® IPN/PD/RED

Results from field documentation

4 of the 19 sites have been diagnosed with PD, all of them with limited PD specific mortality. In addition the follow up has shown that 11 sites with a history of PD don't have any detection of PD after stocking with QTL-innOva IPN/PD. Mortality has been low across the board at all follow up sites. Records show less than 5% accumulated mortality on 13 of the 19 participating sites that have had fish in the sea for more than 10 months (Figure 2).

Both PD and IPN, two of the most costly diseases in the last 10-15 years seem to be on the decline in fish farming. Results so far show that QTL-innOva IPN/PD provides a double effect, by both producing a reduction in an important pre-disposing factor for PD (IPN outbreak), at the same time as increasing the overall ability to resist infection pressure from SAV in the environment. This will contribute significantly to an enhanced "virtuous circle" with a gradual reduction in the number of PD outbreaks/SAV positive populations and a commensurate gradual reduction of the infection pressure in the environment.

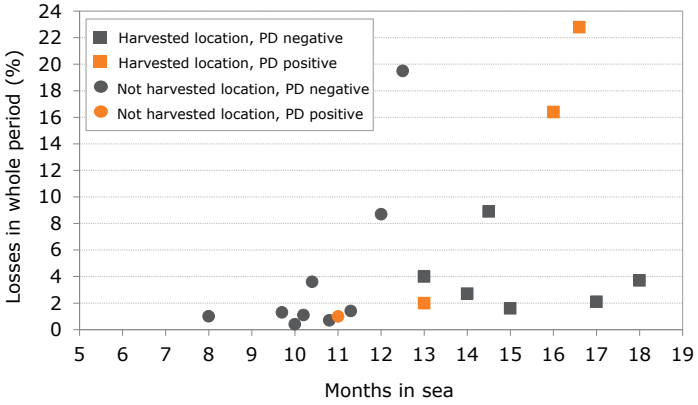

Figure 2. Recorded mortality/losses and number of months after sea transfer of fish at sites participating in field documentation. Sites are located in the area from Rugsund in Bremanger to Hardanger fjord.

Benefits of QTL-innOva IPN/PD:

- Defence against both PD and IPN
- Synergistic effect – increased IPN defence gives reduced risk for PD
- Field experience shows that the incidence and mortality of PD is reduced in comparison with previous years that didn't use QTL-innOva IPN/PD

AquaGen
seeds of vitality and profitability

AquaGen AS • PO Box 1240 • Sluppen • N-7462 Trondheim
Phone: +47 72 45 05 00 • Fax: +47 73 54 62 91
firmapost@aquagen.no • www.aquagen.no/en