



Practical effects of producing Atlantic salmon with positive IPN-QTL

Summary of reports from field trial V-4033

Benchmark Genetics Norway

February 2020

Abstract

Infectious pancreatic necrosis (IPN) is one of the most economically impactful diseases in farmed salmon. The disease, which is caused by an aquabirnavirus, can cause high levels of mortality in both fry and post-smolt. Individual marker-assisted selection based on the major QTL enables efficient production of commercial lines with significant genetic IPN tolerance/resistance.

Two commercial products of salmon, one with the resistant genotype at the IPN QTL (IPN resistant), and one with the susceptible genotype at the IPN QTL (IPN susceptible), were tested in a total of four production cages (195,000 test fish per cage) at two sea-sites, with the aim of documenting any differences and genotype/location interactions for growth, survival, and feed utilization.

No IPN was detected at the sites, resulting in a failure to document a direct effect of IPN-QTL on the groups' IPN resistance or associated production traits. The growth of test fish was significantly influenced by location, which in turn had a direct effect on their biological feed conversion rate. No significant differences in growth or biological feed conversion rate were observed between the test groups. The IPN susceptible group had better overall survival than the 'IPN-QTL' test group, which resulted in an overall higher economic feed conversion rate in this group.

The impact of marker-assisted selection for the IPN QTL has been shown to be associated with a marked reduction in IPN outbreaks in Norwegian salmon production, lack of detection of IPN in the field trial meant that it was not possible to document practical effects of producing salmon that are resistant for the IPN-QTL.