July - Sept 2016 - SPATnz Executive Summary

SPATNZ

Summary of progress during this quarter

Our selective breeding programme provides a safe and structured approach to providing a wide range of the best mussels that occur naturally in New Zealand. In the last quarter we've put a lot of effort into assessment of the 2014 cohort of mussel families. Our standard measurements cover shell and meat characteristics that are important to the farmer, the processor and the consumer, and that we want to improve through selection. Equally important is making sure that we don't compromise on other key traits that are already adequate. We quantified the resilience and survival of the mussels through a series of challenges, their propensity to reattach to mussel ropes after seeding, and their ability to hang onto the ropes during farming and harvest. It's also really important that we breed mussels that efficiently convert their phytoplankton food into mussel biomass, especially because mussel food is a finite resource that is not controlled by the farmer. We set up an ambitious field trial to measure food assimilaton efficiency of about 750 mussels from 75 families on the mussel farm. Results will be analysed in coming months to assess whether these traits are influenced by genetics, and whether there is any tradeoff in one trait by selection for another. DNA samples have also been collected to allow testing of modern genomic approaches that can improve the accuracy and efficacy of selective breeding. There is no genetic engineering involved – just traditional selective breeding aided by DNA fingerprinting.

In this quarter we commenced trials with the operation of our earthen algal ponds which provide food for mussel broodstock (parents) and larger spat. We also commenced fabrication of equipment for the next stage of fitout within the hatchery building. The 14 November earthquakes caused some spillage of algae and larvae, but thankfully no damage to the facility.

Key highlights and achievements

- Screened 75 families of mussels for a wide range of key traits
- Measured for the first time the food assimilation efficiency of 75 mussel families on farm
- Collected DNA samples from 1500 mussels across 75 mussel families for genomic analysis
- Commenced trials with algal production in earthen ponds

Upcoming

- Stage 2 fit-out within the existing hatchery
- Analysis of family assessment data
- Use new genomics methods to confirm parentage of mussel families
- Attempt to find DNA markers associated with traits of interest

Investment

Investment period	Industry contribution	MPI Contribution	Total Investment
During this Quarter	$0.39 M	$0.39 M	$0.78 M
Programme To Date	$7.47 M	$7.47 M	$14.93 M

Top: *Measuring food assimilation efficiency of 75 mussel families on-farm.* ***Bottom:*** *Monitoring the resilience of mussel families to a series of challenges.*