

SPATnz PGP Programme -MAR 2013

Shellfish – the next generation

The Shellfish Production and Technology (SPATnz) PGP Programme will provide a step change in mussel aquaculture by developing hatchery production of selectively bred juvenile mussels. Mussel “spat” (juveniles) are currently collected with seaweed washed up on 90-mile beach, or caught on lines in Golden Bay. In both cases, we take what we get in terms of quality and quantity of spat. Once we develop methods for large scale spat production we will be able to control the timing of spat supply and to produce spat from parents selected for characteristics desired by farmers, processors or customers. This same traditional selective breeding approach has been practised for many years for virtually every species that is farmed on land.

In the quarter to 31 March 2013, the programme focussed on the development of hatchery and land-based nursery protocols for production of green shell mussel spat, and investigations into seasonal impacts on larval rearing yields

Microalgae (mussel food) production has benefitted from an upgrade of our algae area to provide more stable and suitable growing temperature. We are conducting trials comparing the success of larvae reared using algae from different methods of production.

The effects of site and environmental factors on spat retention and growth are being studied, primarily at two sites, one proven and the second with very similar physical characteristics. We have started to scale up these deployments to be more representative of commercial operations.

Selective breeding will improve the performance of green shell mussels throughout the value chain, or to breed for characteristics with specific market potential. The breeding approach essentially involves the production of “cohorts” of around 50-60 “families”. Each family represents the offspring of one male and one female mussel produced in a controlled mating. Cohorts of about 50-60 families are reared from egg to harvest together, so that their performance can be validly compared. Performance data are integrated into a selection index using quantitative genetic techniques. The selection index weights traits according to their benefits to industry.

Work approved and conducted to date includes:

- Sorting out remaining mussels from the 2008, 2009, and “SPATnz” cohorts to establish required broodstock holdings in multiple locations.
- Developing a plan for the use, engraving and deployment of the 2012 cohort, carrying out final seeding and commencing engraving.
- Producing the first batch of mussels in a key experiment examining the effect of birth date and stock type on season of conditioning.