



## ‘BLUE SEED’

**Technology development for a reliable supply of high quality seed in blue mussel farming**

### The Challenge

Blue mussels are a traditional product in the Europe and the product is highly regarded and well accepted by consumers. In addition, mussels are healthy, tasty and produced in a sustainable way.

However, existing blue mussel culture has two technical limitations. The first is the unpredictability in seed supply. Techniques for seed supply are dredging wild seed beds, scraping mussel seed from rocks and collecting seed by natural settlement on, ropes or other substrates. Success of any of these methods depends on environmental conditions, which fluctuate. The amounts of wild seed available are therefore extremely variable from year to year. Producing seed under controlled conditions in a hatchery will disconnect its production from environmental factors and provide a reliable supply of seed.

The second technical limitation is a lower meat quality during and after the spawning season. Preventing maturation of market-size mussels is a major challenge to all European mussel farmers.

The use of hatchery-produced seed and sterile triploids could contribute to the solution of these two pan-Atlantic challenges. To reach these goals, the appropriate hatchery and nursery technology needs to be developed. In addition, any future program aiming to strengthen mussel quality through genetic improvement techniques will require well-tuned hatchery and nursery procedures for seed production.

A more reliable seed supply, and the possibility of offering “all-season” mussels to the market will enhance competitiveness in all European Atlantic blue mussel producers. The availability of hatchery-produced seed will bring more stability to the market, long-term security for jobs, development of coastal areas and an alternative to fisheries for both workforce and products.

### Project Objective

The long-term KEY GOAL of the BLUE SEED project was to secure a reliable supply of hatchery produced seed and to develop techniques allowing farmers to sell high quality blue mussels all year round.

### Key Points

To achieve the long term goals a number of scientific and technical project objectives were formulated:

- Develop hatchery technology for a reliable blue mussel seed production, by focussing on (a) broodstock conditioning, (b) larval rearing and (c) seed production.



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### EATiP Thematic Area of Relevance

**TA1:** Product Quality, Consumer Safety and Health

**TA2:** Technology and Systems

**TA3:** Managing the Biological Lifecycle

**TA4:** Sustainable Feed Production

**TA5:** Integration with the Environment

**TA6:** Knowledge Management

**TA7:** Aquatic Animal Health and Welfare

**TA8:** Socio-Economics and Management

### Key Words

Shellfish, Mussels, Hatchery, Triploid, Tetraploid

### Project Information

**Contract number:**

017729

**Contract type:**

CRAFT SME research

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24 months (01/11/2005 – 30/10/2007)

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- Develop a viable production method for (a) sterile triploid mussel seed and (b) tetraploid broodstock that will enable year-round marketing of high quality mussels.
- Compare, in each of the project partner countries (FR, NL, ES, UK), the economic feasibility of producing blue mussel seed based on hatchery-produced larvae with the benefits of blue mussel seed collection methods presently in use.

## Output Highlights

### **Reports on (1) performance of diploid and triploid blue mussel larvae and seed and (2) performance of different culture methods and types of spat during grow-out from spat to seed**

These reports summarize the results of the comparative studies on diploid and triploid mussel larvae and seed. They give companies an overview of what to expect regarding growth and survival when starting commercial production of triploid mussel seed. They are public documents that can be used by researchers, teachers, people involved in the aquaculture industry and environmental agencies.

### **Bio-economic model for calculations regarding costs of blue mussel seed**

The model developed during the BLUE SEED project provides a framework for some basic bio-economic analysis of the costs and benefits associated with the various sources and methods of securing seed mussel, thus allowing estimation of the required break-even production.

### **Report on production costs for different blue mussel seed production methods**

This report summarizes the outcomes of the model calculations concerning the costs of mussel seed production, thus allowing companies to develop business models for production of hatchery seed.

## Next Steps – Suggested Actions/Follow On

- The BLUE SEED protocols for broodstock husbandry and multi-ploidy induction will be available to the public during 2012, following the period when only the project partners had access to this knowledge.