

SEA THE FUTURE- Current Challenges and Future Perspectives in Mariculture Research

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With the world population exceeding 7 billion and a UN forecast of 9 billion by 2050, food production to feed this population is expected to be a major challenge. This is particularly true in view of the dwindling fish stocks in the seas worldwide. In fact, the latest publications give a disturbing forecast that as a result of continuing overfishing, marine fish by 2050 will disappear and will be replaced by less edible and lower forms of life.

This alarming scenario and the imperative to supply the population with affordable and healthy nutrition, has been a driving force to prioritize the development of marine aquaculture (mariculture) and its associated technologies in Israel. As a result, the National Center for Mariculture (NCM) was established in the southern city of Eilat on the Red Sea in 1971 as a focal point to lead this effort. With a staff of more than 40 scientists, engineers, technicians and graduate students and equipped with state-of-the-art facilities, the NCM has undertaken an interdisciplinary research approach to domesticate a range of marine organisms for mariculture using innovative technologies to facilitate cost-effective production.

The following areas of research represent the current R&D effort at the NCM:

- Domestication of new species of fish and shellfish for farming such as groupers, seabream, grey mullet, bluefin tuna, rabbitfish, abalone and sea urchins;
- Genetic selection of farmed species to improve their economic performance such as seabream and groupers;
- Health management in mariculture systems (disease identification, prevention and cure);
- Development of an innovative, “zero waste” (environmentally – friendly), pond system for integrated culture of fish, shellfish and seaweed.
- Development of unique super-intensive, energy efficient fish rearing systems with a rearing capacity of over 100 kg/m³
- Technological application of algae (both microalgae and macroalgae)
- Development of innovative and applied biotechnology for the mariculture industry such as improved fish feed formulas, larval microdiets, vaccines, and spawning modulators, some of which have become the focus of technological incubator companies.

The NCM plays an active role in the commercialization of its R&D through technology transfer and support to new mariculture enterprises. This continuous interaction and feedback between the R&D program and the industry is crucial for ensuring the industry’s increasing competitiveness, efficiency and profitability.