Aquaculture in Iceland

For centuries, Icelander's have known of the possibility of transferring live freshwater fish into fishless streams or lakes. The first attempts to fertilize and hatch salmon ova and release the emerging fry into rivers began in Iceland in the year 1884. The first steps in development aquaculture in Iceland involved mainly hatching of salmonids and restocking of rivers until 1950.

In 1951, the first fish farm started with a small scale rearing of market size rainbow trout for consumption. In the nineties, Icelandic scientists and farmers worked on developing aquaculture species such as halibut, turbot, abalone and cod. Today in 2009, the main increase in volume has occurred in production of Arctic char, cod and salmon. The current production is around 5,000 tonnes a year and is expected to double by 2015. At present, the most important farmed species is Arctic charr, a typically arctic fish that is a well suited fish to culture in Icelandic circumstances.

Facilities

In 2009 there were about 45 registered fish farms in Iceland. Of those about 30 were producing juveniles, mostly for salmonid on-rearing. Only four were producing juveniles of marine species. There were 10 sea cage farms, most of which are producing cod. There are 25 additional land-based farms, mostly involved in farming Arctic charr. Ten mussel farms are in operation, mostly on experimental basis.

The land-based fish farm Silfurstjarnan in Öxarfjördur. Photo. Valdimar Ingi Gunnarsson.

Fish farms

Aquaculture in Iceland has been a small scale industry since the 1980s. Conditions for fish farming are regarded as excellent in Iceland thanks to unpolluted seas and an abundance of clear spring water for aquaculture. High potentials exist in Iceland for developing both land- and sea based farms.

Economical geothermal water for heating is exploited in hatcheries and hydro electric power is utilized for pumping and other usages on farms. Renewable hydro power and geothermal water means that farming of warm-water species is viable, for example turbot, but it also means that fish farming in Iceland has a minimum carbon foot print.

One of the key advantages of aquaculture in Iceland is the virtually disease free environment. Know-how is very advanced in the industry, as shown by the success achieved in hatching, smolt and fingerling production and rearing of difficult species such as halibut. Ongoing research, development and breeding programs ensure quality service to the fish farming industry. Selective breeding and production of healthy Atlantic salmon eggs are supplied on a year-round basis. In recent years, major fishery operations have moved into aquaculture, invested in salmon and charr farming and as well in research and development on farming cod.

The infrastructure in Iceland for aquaculture is advanced, covering fish farmer's education, health services, diseases control, processing, sales and freight. Iceland has two fish feed mills that service fish farms at home and abroad. The raw material for fish feed is mainly fishmeal, fish oil and vegetables resources. The fishmeal and oil is produced from fish from Icelandic fishing grounds that are not economical for human consumption. The feed programs take the changing nutritional requirements in the lifecycle of the fish into account. The content of protein, fat, vitamins and minerals in the fish feed is carefully adjusted to the needs of the fish, from fry to brood stock.

Export

The export of aquaculture products reached a maximum in 2006 with around 10,000 tonnes in volume and about 3.3 billion ISK in value. Since then, export volume decreased to about 5,000 tonnes in 2008, there of about 3,000 tonnes of Arctic char products. The largest market for aquaculture products from Iceland by volume is the United States. One Icelandic firm has been successful in producing halibut juveniles, most of which are exported to Norway. One juvenile fish farm export Atlantic salmon smolts to Norway. Furthermore, one firm in Iceland has been specializing in the selective breeding of Atlantic salmon and has been exporting eggs, mainly to Chile, Canada and the Faeroe Islands.

Environmental issues

A license is required to operate a fish farm in Iceland. There are two main licenses that are required: An environmental license and an operational license issued by two governmental institutions controlled by the Ministry for the Environment and hence by the Ministry of Fisheries and Agriculture.

A number of other state and communal authorities are involved in the process of licensing and have control responsibilities. The environmental license contains specific criteria regarding pollution, harmful chemicals, distribution of suspended solids and other local environmental issues.

To protect wild stocks from possible genetic mixing and parasite infestation, it is prohibited to rear salmonid species of reared origin in sea cages in fjords and bays close to major salmon rivers. GR/*Des 2009.*