

## INNOVATION

### FREEZE YOUR MILT

# Norwegian company reports progress with new cryopreservation technique

**C**ollaborative efforts between a cryopreservation company in Norway and a salmon hatchery and fish breeding company in Canada have confirmed the efficacy of a new approach to preserving milt.

The initial work in Canada has been with coho salmon but it is part of a larger international program to aid in storing vital genetic material that could aid both the aquaculture industry and fish-conservation efforts for endangered stocks around the world.

The program centres on the Cryogenetics AS company of Norway which has devised a new seven-step method of fast-freezing milt from a number of species.

The Tri-Gen Fish Improvement Ltd. company of British Columbia, under managing director Bruce Swift, has been helping with the research, in a two-step trial conducted last year.

Cryogenetics managing director Jorn Ulheim confirmed that in the past two years or so, the company has had a number of notable successes with using deep-frozen milt from various species to fertilize eggs from females. They have standardized parts of the protocol to bring the fertilization rate in the various species up to a level of about 90-94%.

The deep-freezing system was also tried with cod embryo, and the embryo lived.

Ulheim said to this point the company has been working mainly in salmon, first with Atlantic salmon and then Pacific coho but also Pacific chinook and sockeye, and cod and trout. He also mentioned tilapia as a possibility.

He said the program is expected to assist salmon farmers and hatcheries in Chile and Canada, where there are severe restrictions on importing eggs from abroad, because of disease considerations.

Ulheim also explained that the company has developed a special storage and delivery pack as part of the program to standardize the techniques and technology to ensure a suitably high rate of successful fertilization at whatever time of year it's decided to use the milt. Each pack holds 10 ml of diluted milt at a standardized dilution level. That's generally enough sperm to fertilize about 2,000 eggs of whatever species and is a major improvement in convenience from the five-ml straws which have been used for cryopreserving milt in the past. It has also developed a 20-litre thawing bath for reheating the milt.

Ulheim explained that one of the great advantages of taking milt from selected male fish and cryopreserving it is that it gets round the problem of seasonality.

Ulheim said that while the Cryogenetics program is initially expected to be a considerable help to various sectors of commercial aquaculture, he also expects it eventually to a great assistance to publicly funded fish-conservation programs, since it can be used to preserve the last tiny remnants of genetic material for different endangered stocks.

— *Quentin Dodd*



Cryogenetics' cryo-preservation trailer.

Inger Grevle displays a sheet of six of the plastic Square Packs the company has invented and patented for milt storage. They're used instead of conventional straws.



## Cryopreservation firm setting up branches in Canada and Chile

Owing to increasingly-tight restrictions on egg imports in Canada and Chile Cryogenetics AS has already started establishing branches in those parts of the world.

A 20-foot mobile cryopreservation trailer has been set up on the Canadian west coast and is working with the Tri-Gen Fish Improvement Ltd. in British Columbia's Fraser River valley.

Ulheim said that to begin with Cryogenetics was sending out a crew of two people to operate the facility and work with some of the fish-farming companies one or two days a week.

The pace is dictated in part, Ulheim indicated, by Cryogenetics having a biosecurity process which is designed to be as strict as or even stricter than the requirements of the countries where it operates.

Ulheim explained that the company wants to make sure that in handling milt from different companies and from different individual fish, there is no chance of any disease being transferred from fish to fish or company to company.

As a result, he said, none of the cryopreservation facilities will handle more than one company's milt in any one day; steps will be taken to ensure against fish-to-fish contamination; and at night the entire facility and all of its equipment are disinfected, ready to receive the next customer the next day.

Ulheim said he expects a good deal of time and effort to be given during the first two years or so to training personnel from the different companies so that they know the correct protocols to follow.

He also said it's intended to set up storage facilities or banks for holding cryopreserved genetic material in aquaculture-orientated areas of countries where Cryogenetics has clients.

Further information is available from Jorn Ulheim, managing director of Cryogenetics AS by email at: [jorn.ulheim@cryogenetics.no](mailto:jorn.ulheim@cryogenetics.no) or Bruce Swift, managing director for Tri-Gen Fish Improvement can be contacted by email at: [bruceswift@shaw.ca](mailto:bruceswift@shaw.ca)

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