

FEATURE

MariCal extends its SuperSmolt technology from salmon to cobia

Hatchery International has followed the development and application of MariCal's SuperSmolt® technology (see H.I. July/August 2003, and May-June 2004), in which juvenile salmonids receive a combined water treatment and specialty feed over a 3-6 week interval prior to their transfer as smolts from freshwater to the sea. This treatment pre-acclimates the fish to osmoregulate in seawater despite the fact that they remain in freshwater that contains only dilute concentrations of calcium and magnesium salts. This SuperSmolt Program allows hatchery operators to smoltify fish outside the normal smoltification "window" and to obtain other benefits (reduced stress, lower mortality, better growth) after transfer to seawater.

The technology relies on an understanding of the role of calcium-sensing receptor proteins (CaSR's) in osmoregulation, and obviously has potential application for species other than salmonids. It is natural to suppose that other

diadromous or catadromous species could be amenable to similar manipulations. Indeed, the latest research by MariCal has shown that including appropriately selected and proportioned salts in the diets of some fully marine species such as Cobia, can allow them to be raised in only brackish water.

This has obvious commercial advantages. Imagine the possibility of marine species being raised at inland locations independent of access to oceanic water, thus eliminating the need either to locate the farm on high-priced ocean-front real estate, or incur the expenses and risks of maintaining grow-out cages offshore. No doubt the technology will continue to be improved and its application extended.

For more information visit their website at www.marical.biz

SuperSmolt system making gains

In our discussions with MariCal, of Portland Maine, for background on the use of their technology in on-land, low salinity Cobia culture, I also enquired of recent developments in the use of their SuperSmolt® system. It seems its use is expanding world wide, and last year no less than 20 million salmonids were produced with the use of a SuperSmolt® making a grand total of over 55 million since the technology was first introduced.

Where is all this happening, and why? The reasons vary, but generally it is because hatchery production can be increased since neither smoltification, nor transfer to seawater, are dependent on the natural spring-time smolt "window"; and general performance (growth and survival) is often better than in naturally smolted fish.

But there are other reasons. Salmon producers in Chile are having to move away from lake-based smolt production because of the threat

of disease and other environmental issues, and move into tank-based systems. They are also discontinuing their intermediate estuarine phase, and transferring fish directly to grow-out cages at sea. Supersmolt technology also eliminates the need for a winter diapause, enabling fish to be prepared for transfer even in their first season. It is also particularly useful in Canada and the US where smolts that miss the normal Spring transfer period because of lack of space in grow-out cages, and would otherwise revert to the fresh water phase, can be transferred later with impunity. The same reasons apply in Europe where SuperSmolt® smolt can now be stocked at any time of year, optimizing both hatchery and grow-out site stocking and production.

For more information visit the MariCal website at www.marical.biz

— David Scarratt

COBIA continued

located at Saltville, in the South Western part of Virginia where abundant high quality salt deposits and proximity to researchers at Virginia Tech have made such a venture attractive. Virginia Cobia Farms is designed to accelerate the production of cobia in land-based RAS through the application of MariCal's proprietary rearing technology, which permits the culture of marine finfish in ultra-low salinity water. (See sidebar)

Although Virginia Cobia Farms believes the greatest opportunity for cobia farming in the United States is in the production of market-sized cobia in land-based RAS, it is still open to the idea of someday using its Saltville assets to produce large, disease-free cobia fingerlings for direct stocking into seawater netpens for a future offshore aquaculture industry. In this regard, Saltville's proximity to interstate highway I-81 puts it within half a day's transport to most States that could support an offshore culture industry for cobia. Its inland location also puts it in close proximity to a number of metropolitan areas where there is growing demand for fresh, high quality,

white-fleshed fish that is sustainably produced in environmentally friendly conditions, and that is also high in omega 3 fatty acids. Virginia Cobia Farms believes that cobia is just the kind of healthy seafood product that could have mass appeal similar to that of tuna, and that there is plenty of room in the market for fish raised in both offshore pens and land-based RAS's.

While continued enhancement of larviculture production protocols is scheduled at Virginia Tech in conjunction with other collaborating industrial and academic partners, other research thrusts with respect to cobia are accelerating. These areas include identification of key cobia egg quality indicators, environmental optimization, nutritional requirement studies, investigations on dietary fishmeal and fish oil replacement, gastrointestinal physiology, health and welfare and optimization of low salinity technologies to gain uppermost production performance of selected animals.

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MINI PROFILE



Lancashire hatchery raises roach for English coarse fishery

Coach are one of England's most popular "coarse" or recreational fishing species, and the country's Environmental Agency recently put out about 20,000 hatchery-bred juveniles into a 10-mile stretch of Lancashire's River Calder and its tributaries to help anglers.

Grant Talbot, hatchery manager at the agency's Leyland fish farm, which reopened recently following a virus outbreak in 2004, said the farm produces about 70,000 juvenile roach a year, along with 20,000 chub and 40-50,000 dace, for stocking out into 10 catchment basins across northwestern and northeastern England.

The hatchery maintains a small broodstock of about 200 roach, but most of the breeding stock are caught from different rivers to ensure biodiversity. They are induced into spawning with the use of CPE hormone. Typically they start to spawn within about 15-24 hours of injection.

The hatchery, one of two national hatcheries run by the agency that raise roach, rears the fish for about 18 months before releasing them into the wild.

Talbot said the Calder River runs through the northern part of Manchester, one of the United Kingdom's largest and most industrial cities, and outflows from the area's cotton and textile mills – particularly during the Industrial Revolution of the 19th century – at one time polluted the river and destroyed the fish stocks.

The single-story hatchery, which is about 50 metres long and 30 metres wide, was built in 1986 and has roughly 20 indoor troughs and eight outdoor ponds of up to about 2,500 square metres. The facility is capable of handling 750,000 to one million larvae at a time.

The recirc facility works with the Rivers Authority, inducing the fish to spawn at the same time as their cousins in the wild. The roach spawn in early May. In the wild, their sticky eggs are laid on weeds and other aquatic vegetation but in the hatchery the stickiness is removed and the eggs are reared using bowls and then zoo jars to keep them in constant motion. They usually take about five to seven days to hatch, and the larvae are initially fed enriched artemia or brine shrimp.

— Quentin Dodd

