

closed recirculating systems, only hours from major urban centers, producing tens of thousands of jobs and hundreds of millions of dollars in revenue.

But the Costs

So why aren't more fish being grown this way already? The answer is cost. To put it in the simplest terms, it costs about \$3 a pound to raise a salmon to 10 pounds using today's farming techniques of open cage aquaculture. To raise that same fish on land costs about \$4 a pound.

And this is where the debate about GMOs comes into play. Land-based aquaculture companies can grow genetically modified fish at or near the same cost as their ocean open cage competitors, leveling the playing field. Take the case of the first GMO salmon approved by the FDA last year. To produce it, an ocean pout gene is spliced into the salmon DNA, which allows it to grow faster, in the dark, and in cold water, saving electricity and cost. Importantly, the process produces fish that are environmentally sustainable and **nutritionally and chemically identical** to their non-GMO counterparts.

The traditional farm salmon operations aren't going to make the jump to producing salmon in closed recirculating systems on land out of the goodness of their hearts. They will produce fish on land only if they are forced to do so through competition. If the major consumers of salmon in the country buy into the environmental benefits of raising fish on land, salmon companies will



The Clear Springs rainbow trout farm in Pocatello, Idaho where fresh mountain spring water is used to grow this salmonoid species.

have nowhere to sell their ocean-raised salmon.

The Oyster Tells the Tale

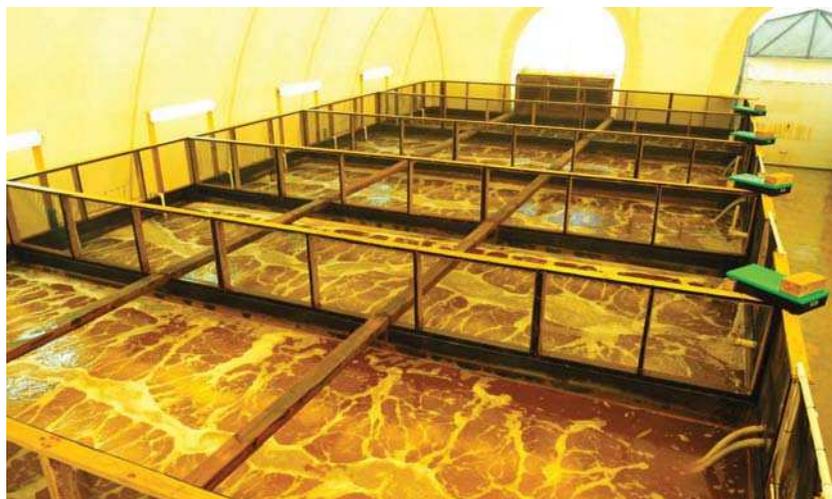
Over the last decade, the consumption of oysters, both

live in the shell and shucked, has exploded across the country. It is a "feel good" story with oysters being a "cornerstone species" of their ecosystems, filtering 60 gallons of water per day per oyster and benefitting every living organism in their environment. The oyster aquaculture industry has exploded to meet the increased demand. What you may not know is that roughly 50 percent of the "half shell" oysters on the market today are genetically manipulated. They are non-reproducing "triploids." Their chromosomes have been manipulated so they cannot reproduce. Triploids take the energy required to reproduce and transmit that into growth energy, reaching their preferred market size of three inches in 14 months versus the 30 months required by a "diploid" oyster. They are **chemically and nutritionally identical** to their non-

GMO counterparts. They have been readily accepted by the restaurant community and public for years.

We will soon face a choice about bringing genetically-modified fish to our tables as well. As seafood demand increases each year, we will have to grow more fish. The question is where — at sea or literally in our own backyards. Which path do you choose?

TIM SUGHRUE is executive vice president and founding member of Congressional Seafood Company. He holds a BS from North Carolina State University in Wildlife Biology and Fishery Science. Tim lives on Maryland's Eastern Shore and has worked as a full-time commercial waterman on the Bay. He has a unique perspective on the seafood industry being a former research biologist for the Maryland DNR and having sold almost a billion dollars worth of seafood in his career. He hopes to shed light on some of the larger issues in the seafood industry and facing restaurateurs today.



A brood stock tank where Global Blue Technologies grows 50-gram and larger white shrimp brood stock. The big shrimp are sold and shipped to shrimp hatcheries around the world.