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New Jersey Aquaculture Growers Forum

Hard Clam Genetics and Breeding at Rutgers University

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Where: Ocean City Free Public Library
1735 Simpson Ave, Ocean City, NJ, 08226

Registration: https://forms.gle/TMCHcxWSCTHpwZuk8

Abstract: Rutgers has been breeding oysters since 1960, but its work on hard clam genetics and breeding lagged behind despite that New Jersey has a significant hard clam farming industry. In the early 2000s, studies were conducted to investigate if triploids, which were popular for oyster farming, were useful for hard clam aquaculture. Triploid hard clams grew significantly faster than diploids in some but not all studies. These triploids were chemically induced, and mated triploids produced from tetraploids are expected to show better performance. The production of tetraploid hard clams has been elusive. If successfully produced, tetraploid hard clams may produce improved triploids and lead to commercial production. Stocks from different geographic regions have been evaluated in NJ demonstrating differences in growth and survival. Genetic markers associated with QPX resistance have been identified and used for marker-assisted selection of hard clams. The genome of the hard clam has been sequenced, and a 60K single-nucleotide polymorphism (SNP) array has been developed by the hard clam breeding collaborative. Currently, hybrid crosses are being made, and the SNP array is being used to monitor the genetic health of cultured clams and for genomic selection. The development of tetraploids and genomic selection may contribute to hard clam farming by providing improved stocks. Co-authors: Paul Coyne, Zhenwei Wang, Samuel Ratcliff, Michael Acquafredda, and Michael De Luca.

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