RUTGERS
Office of Technology Commercialization

Improved Eastern Oysters

Description:

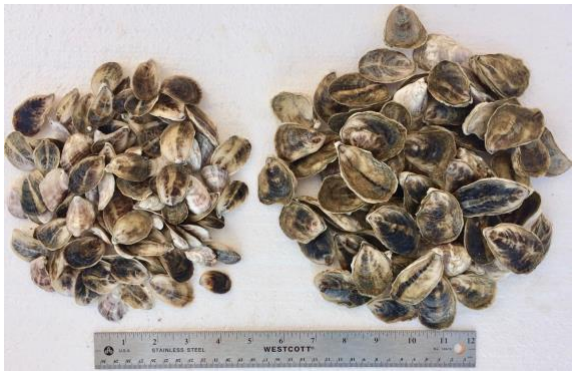
Rutgers University has been breeding eastern oysters (*Crassostrea virginica* Gmelin) since 1960. Rutgers oyster strains have shown strong to moderate resistance to two diseases (MSX and Dermo). Rutgers also invented tetraploid oysters (with 4 sets of chromosomes) and a new type of triploid oysters (with 3 sets of chromosomes) by crossing diploid and tetraploid oysters. Because of their sterility, superior growth, and improved summer meat quality, new triploid oysters developed by Rutgers have become an important part of the oyster aquaculture industry worldwide, accounting for 30-50% of oyster productions in the US and France.

Continued research and development since 1998 have led to further improvement of Rutgers disease-resistant strains. Growth and shell shape have been improved through intensive selection. New genetic materials have been introduced through progressive rotational crossing. Two disease-resistant strains have been released to the oyster industry. One is the Rutgers HASKIN NEH® strain, which is derived from Northeastern populations and shows improved growth and survival throughout the Northeastern region. The other strain is the Haskin DBX strain that is derived from Delaware Bay populations and shows improved tolerance for medium and low salinity environments of lower Delaware Bay. Both disease-resistant strains show improved survival and growth compared with wild and susceptible oysters.

New tetraploid lines have been developed from disease-resistant strains through selection and systematic interploidy breeding that combines genetic improvement from diploid, triploid and tetraploid phases. Triploids produced from the new and improved tetraploids are healthier and grow significantly faster than diploid oysters. Tetraploid broodstocks from both Haskin NEH® and DBX are available for commercial triploid production.

Strains available for release:

Haskin NEH®: diploids and tetraploids
Haskin DBX: diploids and tetraploids



Triploid oysters (right, 3N) produced from improved tetraploids vs. diploid control oysters (left, 2N).

Market Applications:

Eastern oyster farming in estuary and coastal waters of mid-Atlantic and Northeastern US.

Advantages:

- Genetically improved oyster varieties for mid-Atlantic and Northeastern US waters.
- Diploid oyster strains with improved disease resistance, growth and diversity.
- Improved tetraploid lines for the production of 100% and improved triploids.
- Oyster broodstocks that produce uniform, faster growing, healthier and tastier oysters.

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