2 Inner flap, front (delete)

Our Project

Forty North Oyster Farms had received funding through the SARE Farmer Grant Program over a span of 2 years to test potential benefits of bottom planting oysters after being grown in floating bags.

Control group: oysters spent the entire study period in floating bags from Spring 2021 to Fall of 2022, being split and harvested when stocking density became too great.

Experimental group: oysters first spent 5 months growing in floating bags alongside the control group. In Fall of 2021 the oysters were emptied from the floating bags and broadcasted on the bay bottom, using a barge and some shovels. The oysters were left for the winter to grow on the bay bottom and harvested throughout 2022.

Survivorship of oysters, **marketability** of oysters, and **cost effectiveness** were examined for the control and experimental groups. Follow along to see our results!

6 - Back Cover (delete)

The Bottom Line

Control group: When the stocking density was decreased the quality was drastically increased. The oysters were extremely clean meaning that decreasing stocking density can increase quality and also decrease labor, but will increase gear cost. Overall labor hours resulted in 61.15 hours. The total harvest count from floating bags was 16,250 oysters. Each site should consider stocking density, as it'll likely change based on wave energy, food availability, fouling organisms, etc.

Experimental group: If purged they would be less muddy and more appealing. Overall labor hours resulted in 120.25 hours. The total harvest count from the bottom was 14,600 oysters.

The Equipment costs for both groups were the same ($1,159.71 for each group)

Final Statement:

Oyster farming is an extremely site specific activity. While bottom planting might work for some farms, it'll be too time consuming and labor intensive for others. Predation will also play a major role in the success or failure of bottom planting.

Floating bags grow a more desirable product. The key to reducing labor and increasing marketability is keeping densities low so that the bags can bounce around in the waves. Too many oysters will increase the weight of the bags and will allow more fouling organisms to grow, further increasing the weight and degrading quality. Finding the correct stocking density is the key to success.

A final factor to consider is the trend towards smaller and denser oysters. They're easier to handle post harvest and much easier to shuck.

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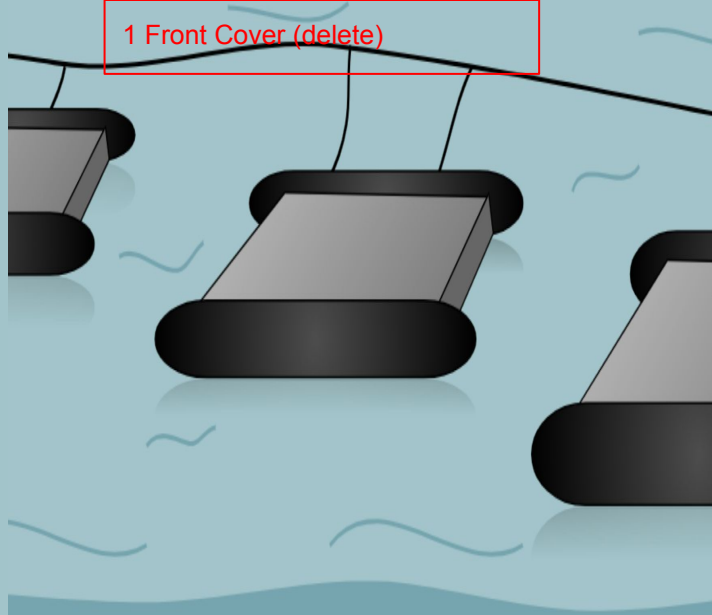
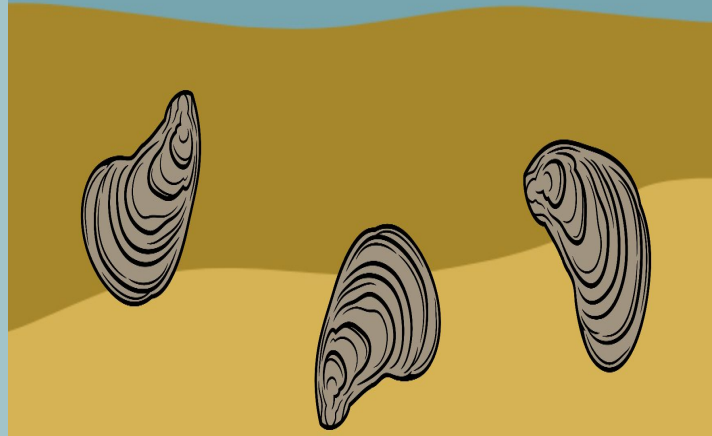
1 Front Cover (delete)



Testing the Efficacy of a Hybrid Floating Bag and Bottom Planting Method to Grow Oysters

Project Summary & Results



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Survivorship

Numbers of alive and dead oysters were counted from random samples of the control and experimental groups throughout the study. The following data shows survivorship data at the time of harvest for each group:

Control group:
By March 2022, the mussels had clogged the bags and bound oysters together. Bags were picked apart and each bag had an average of 72 dead oysters, 123 too small, 147 petite, 38 medium, 17 large. The petite, medium and large were harvested. The dead were discarded. The oysters that were too small were returned to the bags for further growth. Harvests were done in two phases, the second harvest was all market oysters with virtually no mortality. The total harvest count from floating bags was 16,250 oysters.

Experimental Group:
In June of 2022, oysters were retrieved by hand. The bottom planted oysters were planted in a sticky bottom, causing silting and sanding that led to increased mortality. Three bushels of the bottom collected oysters were sampled and the average was 337.6 alive and 71 dead (bushel 1: 303 alive / 52 dead) (bushel 2: 345 alive / 97 dead) (bushel 3: 365 alive / 64 dead). All of the living oysters were extremely uniform and fit the large category. The dead oysters showed no signs of predation, they looked like they died from natural causes or were silted over. The total harvest count from the bottom was 14,600 oysters.

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Marketability

As a part of our marketability tests for the control and experimental oysters, we sent a sample of each to a restaurant owner and oyster sommelier for a blind comparison. Here's a summary of their feedback:

Biggest differences in feedback were in the interior cleanliness, shell appearance, and meat quality.

When shucked, the control group oysters had a cleaner interior, whereas the experimental group had noticeable traces of mud and silt.

Control

Experimental

Feedback showed that the experimental oysters were larger, had more variability in shape/meat quality, and a few were slightly dry. The control oysters were smaller, but deeper cupped.

The experimental oysters had smaller meats though the texture was overall firmer while control oysters were softer and slightly creamy.

As for taste, feedback showed that both oysters were briny and similar in taste.

Both sources of feedback seemed to agree that they strongly prefer the control group oysters due to shell uniformity, cleaner shell interiors, meat content, and mouthfeel.

5 - Inside Right (delete)

Cost Effectiveness

Both groups required 50 floating bags with lateral lines to be constructed, each taking about 10 minutes to make. 100 floating bags x 10 minutes = about 16 and a half hours. Longlines for the floating bags had to be installed on the farm, bags had to be deployed, and light general maintenance was needed, totaling 40 hours. This had resulted in about 56.5 (16.5 + 40) labor hours total, divided by 2 equaling 28.25 hours for each group.

Both groups used mesh oyster bags, galvanized anchors, line, bag floats, hog rings, round rings, and bungy in the same amounts in Phase 1, totaling $2,319.42 ($1,159.71 for each group).

The differences between the control and experimental group costs are as follows:

Control group: Oysters stayed in bags for the winter, so there was not too much winterization labor besides some light maintenance of the bags ~ 5 hours. When is came time for harvest, it took about 27 minutes to process a bag to separate marketable from dead and submarket oysters, and 6.5 more minutes to process the fully marketable bags after more growth time. Overall labor hours resulted in 32.9 hours.

Experimental group: To winterize the oysters and broadcast on the bottom, it took 15 total hours for 4 farmhands, resulting in 60 hours of labor. Collection of the bottom planted oysters at harvest time took 4 people 150 minutes to fill 13.5 bushels, on average 45 minutes to fill 1 bushel per person. Approximately 43.2 bushels were collected (14,600 oysters divided by 337.6 average alive per bushel), resulting in 32 hours to collect bottom planted oysters. Overall labor hours resulted in 92 hours.