

The background of the slide features a close-up, low-angle shot of kelp. Large, broad, yellowish-brown leaves are silhouetted against a bright, hazy sky. Several dark, round seed pods are visible on thin stalks, some in sharp focus and others blurred. The overall lighting is warm and natural, suggesting a sunny day.

Evaluating Infrastructure and Seeding Methods for Scalable Bull Kelp Cultivation

Sea Quester Farms

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Our Mission

Enhance bull kelp cultivation efficiency to drive sustainable growth for Alaska Native industries, local farmers, and the broader mariculture community





Our Approach

Two Seeding Techniques

- Continuous
- Spaced

Three Array Designs

- Suspended Valley
- Benthic Peak
- Peeples Longline



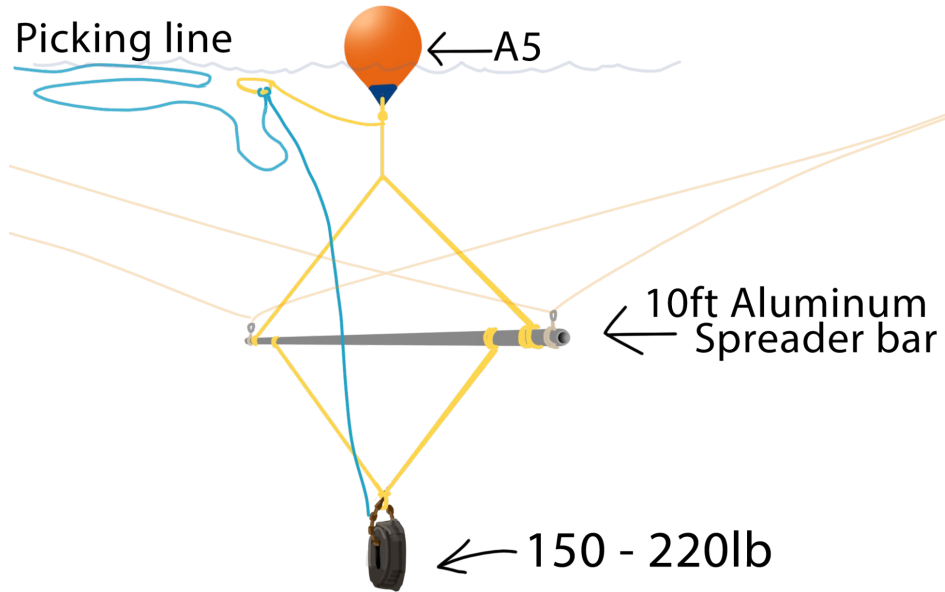
Continuous

Seeding Techniques

- Continuous seeding resulted in extensive intertwining, frequently leading to breakage
- Increased seed spacing led to natural grouping mimicking wild kelp beds and improved kelp size



Spaced

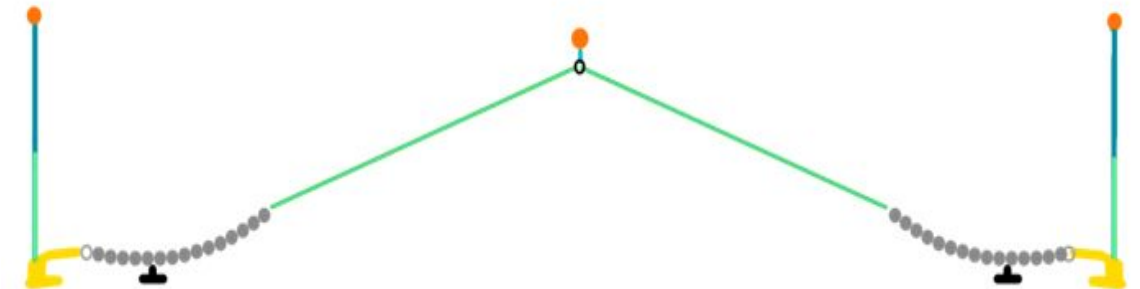


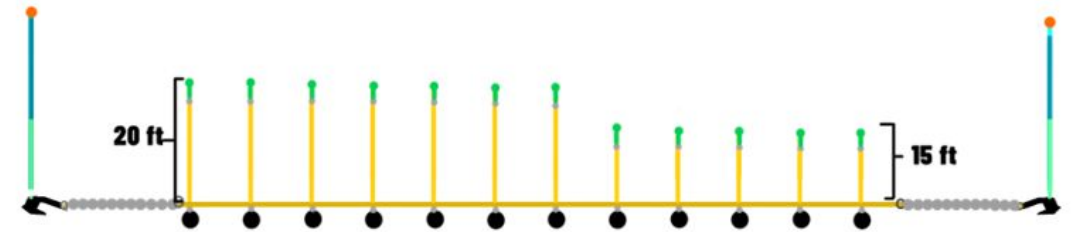
Suspended Valley Array

- 10 ft spacing prevented tangling; 5 ft caused cross-line interference
- Peak growth at 20 ft depth, declining sharply beyond
- Higher bleaching rates observed
- Design increases capacity but requires more maintenance

Benthic Peak Array

- Deep-water segments (beyond midpoint) limited total line utilization to 50%
- Initial growth rates exceeded expectations
- Depth fluctuations observed but growth remained stable
- Reduced bleaching may be correlated with current-driven submersion
- Additional weighting recommended for future depth control





Peeples Longline

- Growth limited by excessive deployment depth
 - Stemmed from inaccurate depth monitoring and inadequate flotation systems
- Anchor weight (100kg) exceeded operational needs
 - Created retrieval challenges and inefficiencies



Harvest & Market Outcomes

- **Total Harvest: 6,000 lbs**
 - Sales to Barnacle Foods: 5,267lbs
 - Internal Use: 300-500 lbs
- Demonstrated feasibility of scalable bull kelp farming



Thank you to our collaborators

