1st International Seaweed Conference USA

Seagriculture

7 - 8 SEPTEMBER 2022
PORTLAND (ME), USA

SEAGRICULTURE INNOVATION AWARD 2022

Name: Amy Blankstein

Company / organization: GreenWave

Description of the Innovation (ca. 250 words):

Launched in April 2022, GreenWave's Regenerative Ocean Farming Hub is a free, online resource designed to provide seed-to-sale support for both emerging and active ocean farmers and hatchery technicians. Already having drawn over 2,200 users across 88 countries and 47 U.S. states to date, the Hub makes GreenWave's training and support offerings and community knowledge-sharing accessible to a significantly wider audience, helping the industry scale and problem-solve more rapidly and efficiently.

The Hub comprises three primary components: curriculum, tools, and community. Practitioner-written courses, which include more than 80 how-to videos, cover everything users need to know to successfully launch and run their ocean farming enterprises. Users can choose where to begin, based on experience level or–for active farmers–seasonal timing. Additionally, users can generate concept designs, along with corresponding gear lists and budgets, using the Hub's interactive Ocean Farm Design Tool. Finally, users can connect in the Hub's Ocean Farming Community, catalyzing a national network of active farmers and hatchery mentors to innovate, collaborate, and troubleshoot technical questions, while also identifying industry barriers that GreenWave can work to resolve.

Other features of the Hub include Seaweed Source—a growing, digital directory of ocean farms in the U.S. which more experienced farmers can use to connect with qualified prospective buyers in their region across current and future market channels—and MyKelp beta, a farm data collection app that supports farmers participating in GreenWave's Kelp Climate Fund seed subsidy program.

What makes your innovation unique compared with other products? (ca. 400 words)

Founded in 2014, GreenWave initially focused on training and supporting ocean farmers locally in Southern New England. Since then, interest in regenerative ocean farming has grown exponentially, with the number of people requesting GreenWave resources now surpassing 9,000 from across the U.S. and 100 countries all over the world. GreenWave developed the Hub to make resources — including interactive training, support, and a connected network of practitioners—broadly accessible in order to capture this momentum.

GreenWave's Regenerative Ocean Farming Hub is the first resource of its kind. The Hub features content (courses, videos, tools, etc.) developed by GreenWave's network of experts and aggregates external resources from all corners of the industry. GreenWave will continue to iterate resources for North American stakeholders, and hopes to leverage the Hub for partners around the globe to support regional stakeholders.

To date, it is the only existing public, online, comprehensive ocean farming industry accelerator, where over 1,000 Community interactions logged over just a few months from launch demonstrate the urgency of the needs it is meeting.

The Hub features innovative tools for each stage of a farm's lifecycle. Using the Ocean Farm Design Tool, aspiring farmers can more easily navigate common startup pain points by generating farm designs, gear lists, budgets, and U.S. state-specific permitting language, based on the location and characteristics of their sites. With this Tool, users can visualize how certain site factors influence farm design, assess financial viability early on in the process, and effectively communicate with regional regulators to apply for a permit. Once a farm is up and running, farmers can move on to developing market relationships with qualified processors and buyers via Seaweed Source. Finally, using MyKelp beta, farmers participating in GreenWave's Kelp Climate Fund can collect key monitoring data on outplanting, growth rates, and harvest, helping them scale operations, effectively market their businesses, and benefit from future ecosystem service markets. The Kelp Climate Fund is a seed subsidy program which provides direct payments to participating kelp farmers as an incentive for the climate-beneficial externalities of growing kelp, including carbon and nitrogen removal and reef restoration.

What special new advantages does your innovation bring in terms of for example commercial, environmental and social factors? (ca. 400 words)

Commercial value:
The Hub is a one-stop shop, providing tools and curriculum designed to meet users where they are and support them at any stage of their regenerative ocean farming enterprises. It is a free resource, responsive to emerging needs and opportunities, and available on demand.

Farmers can leverage the Hub to scale up production and map viable pathways into various commercial markets, including food, agriculture, and bioplastics. Through Seaweed Source, they can build regional networks with qualified buyers who have committed to forward contracting.

Farmers can also apply to receive seed subsidies through the Kelp Climate Fund for positive climate impacts of regenerative ocean farming. The data they collect, in exchange, will provide critical information about their complex farm sites and seasonal crop production, which will support improvements in farm design and growing techniques. Farmers will also be able to leverage this data to provide better information on growth curves, yield estimates, and harvest timelines, which will support better communications and relationship development with buyers and other supply chain stakeholders. In addition, individual farmers and industry stakeholders can use this aggregated data to communicate positive climate benefits to build social license for the kelp farming industry.

Environmental value:
The Hub was designed to capture growing momentum and rapidly scale the regenerative ocean farming industry, in turn accelerating the potential for meaningful climate impacts from growing kelp, like carbon and nitrogen removal and reef restoration.

Additionally, when applied to soil as a fertilizer, kelp has been shown to reduce emissions of nitrous oxide, a potent greenhouse gas that is 300 times more powerful than carbon dioxide. Supplementing livestock feed with a small amount of seaweed can also reduce methane output by nearly 60% in cattle and up to 80% in sheep.

Non-food grade farmed seaweed waste can be turned into sustainable alternatives to straws, paper, and packaging to address the 8 million metric tons of plastic thrown into the ocean annually.

Social value:

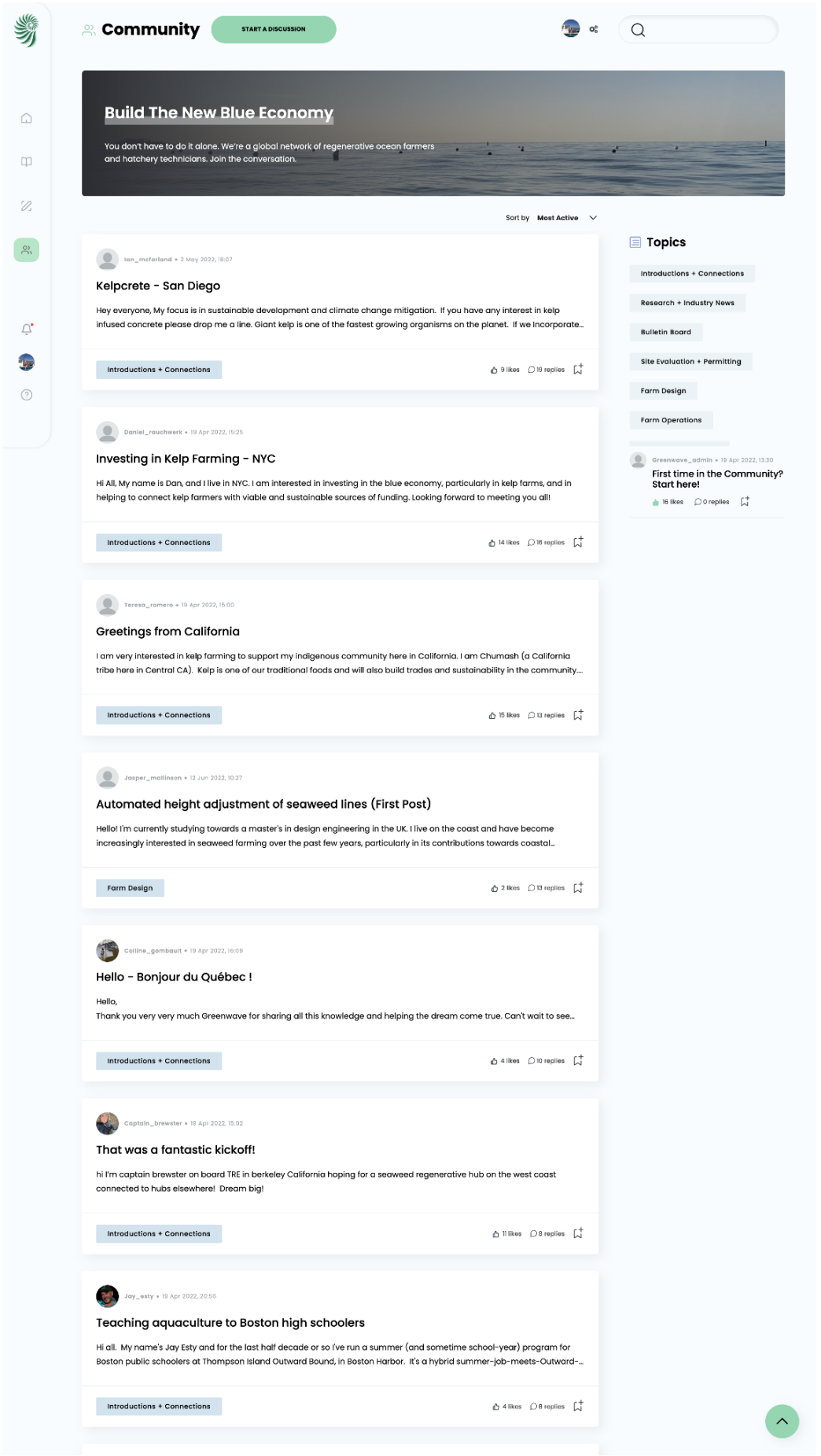
By accelerating the growth of the ocean farming industry and facilitating the development of regionalnetworks of practitioners, the Hub can act as a catalyst to reinvigorate working waterfronts in coastal communities, connecting fishermen and shellfish farmers with economic opportunities and technical support.

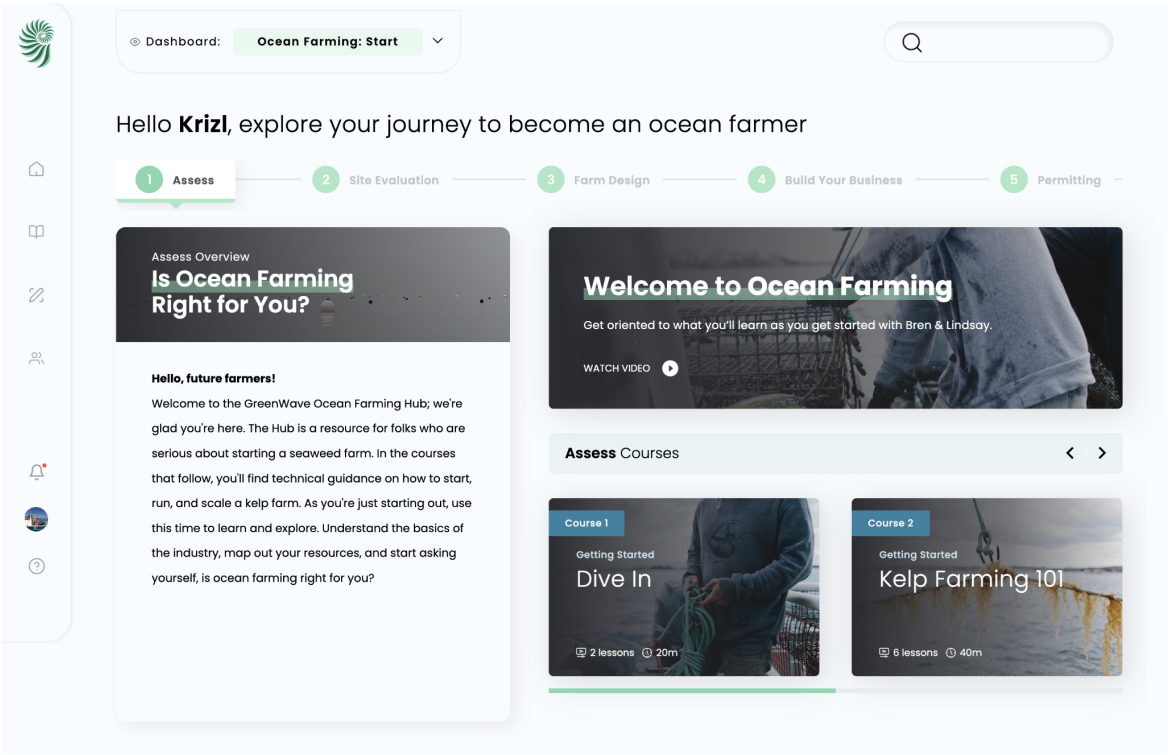
For which market and target group was your innovation mainly developed? Who is likely to be the key customer group? (ca. 200 words).

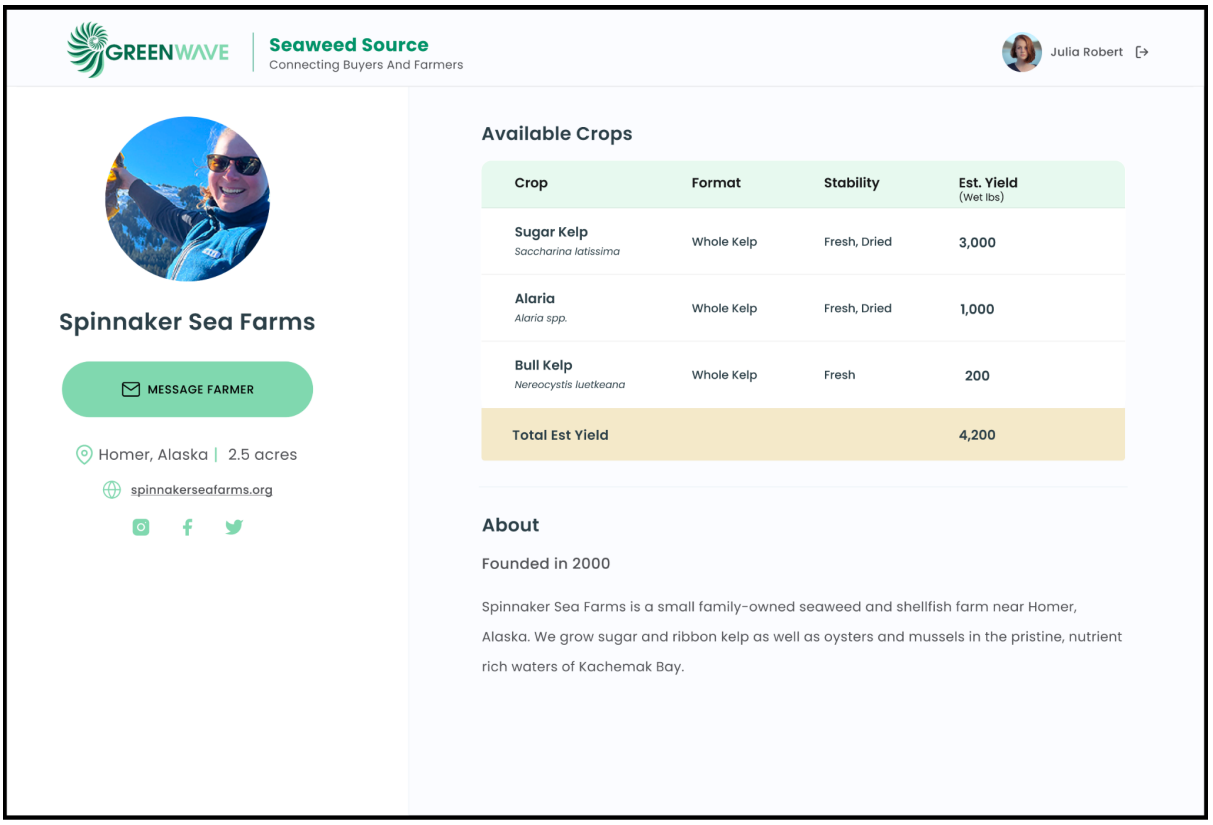
After receiving thousands of requests for resources from diverse geographic regions, GreenWave responded to the demand by creating the Hub for the regenerative ocean farming “community of practice”—aspiring and active fishermen, ocean farmers, and hatchery technicians. The Hub enables GreenWave to extend its low-touch training and support offerings to a greatly expanded audience while maintaining a small, nimble, and responsive team.

Please give very briefly 3 reasons why you believe your innovation should win the Seagriculture 2022 Innovation Award:

GreenWave’s Regenerative Ocean Farming Hub is:
● The first comprehensive and interactive ocean farming resource for practitioners at all stages of experience, with new tools and courses — informed by insights from a network of expert practitioners — that will significantly reduce friction from startup to scale. GreenWave will continue to iterate and expand the content and capabilities of the Hub informed by broad trends of needs and challenges that surface from these interactions.
● Free and user-centric. The Hub meets users where they are, enabling them to prioritize the resources that are most relevant to their current needs.
● Community/Network Building. Practitioners of all experience levels pose questions, participate in Community discussions, and forge connections. GreenWave’s staff and robust network of experts spark and support discussions and connect users with resources and contacts.


Community
START A DISCUSSION
Build The New Blue Economy
You don't have to do it alone. We're a global network of regenerative ocean farmers and hatchery technicians. Join the conversation.
Sort by Most Active
Topics
Introductions + Connections
Research + Industry News
Bulletin Board
Site Evaluation + Permitting
Farm Design
Farm Operations
Greenwave_admin • 19 Apr 2022, 13:30
First time in the Community? Start here!
16 likes 0 replies
Ian_mcfarland • 2 May 2022, 16:07
Kelpcrete - San Diego
Hey everyone, My focus is in sustainable development and climate change mitigation. If you have any interest in kelp infused concrete please drop me a line. Giant kelp is one of the fastest growing organisms on the planet. If we incorporate...
Introductions + Connections
9 likes 19 replies
Daniel_rauchwerk • 19 Apr 2022, 15:25
Investing in Kelp Farming - NYC
Hi All, My name is Dan, and I live in NYC. I am interested in investing in the blue economy, particularly in kelp farms, and in helping to connect kelp farmers with viable and sustainable sources of funding. Looking forward to meeting you all!
Introductions + Connections
14 likes 16 replies
Teresa_romero • 19 Apr 2022, 15:00
Greetings from California
I am very interested in kelp farming to support my indigenous community here in California. I am Chumash (a California tribe here in Central CA). Kelp is one of our traditional foods and will also build trades and sustainability in the community...
Introductions + Connections
15 likes 13 replies
Jasper_mallinson • 12 Jun 2022, 10:27
Automated height adjustment of seaweed lines (First Post)
Hello! I'm currently studying towards a master's in design engineering in the UK. I live on the coast and have become increasingly interested in seaweed farming over the past few years, particularly in its contributions towards coastal...
Farm Design
2 likes 13 replies
Coline_gombault • 19 Apr 2022, 16:09
Hello - Bonjour du Québec !
Hello,
Thank you very very much Greenwave for sharing all this knowledge and helping the dream come true. Can't wait to see...
Introductions + Connections
4 likes 10 replies
Captain_brewster • 19 Apr 2022, 15:02
That was a fantastic kickoff!
hi I'm captain brewster on board TRE in berkeley California hoping for a seaweed regenerative hub on the west coast connected to hubs elsewhere! Dream big!
Introductions + Connections
11 likes 8 replies
Jay_esty • 19 Apr 2022, 20:56
Teaching aquaculture to Boston high schoolers
Hi all. My name's Jay Esty and for the last half decade or so I've run a summer (and sometime school-year) program for Boston public schoolers at Thompson Island Outward Bound, in Boston Harbor. It's a hybrid summer-job-meets-Outward-...
Introductions + Connections
4 likes 8 replies


Dashboard:
Ocean Farming: Start
Hello Krizl, explore your journey to become an ocean farmer
1 Assess
2 Site Evaluation
3 Farm Design
4 Build Your Business
5 Permitting
Assess Overview
Is Ocean Farming Right for You?
Hello, future farmers!
Welcome to the GreenWave Ocean Farming Hub; we're glad you're here. The Hub is a resource for folks who are serious about starting a seaweed farm. In the courses that follow, you'll find technical guidance on how to start, run, and scale a kelp farm. As you're just starting out, use this time to learn and explore. Understand the basics of the industry, map out your resources, and start asking yourself, is ocean farming right for you?
Welcome to Ocean Farming
Get oriented to what you'll learn as you get started with Bren & Lindsay.
WATCH VIDEO
Assess Courses
Course 1
Getting Started
Dive In
2 lessons 20m
Course 2
Getting Started
Kelp Farming 101
6 lessons 40m


GREENWAVE
Seaweed Source
Connecting Buyers And Farmers
Julia Robert
Spinnaker Sea Farms
MESSAGE FARMER
Homer, Alaska | 2.5 acres
spinnakerseafarms.org
Available Crops
Crop
Format
Stability
Est. Yield
(Wet lbs)
Sugar Kelp
Saccharina latissima
Whole Kelp
Fresh, Dried
3,000
Alaria
Alaria spp.
Whole Kelp
Fresh, Dried
1,000
Bull Kelp
Nereocystis luetkeana
Whole Kelp
Fresh
200
Total Est Yield
4,200
About
Founded in 2000
Spinnaker Sea Farms is a small family-owned seaweed and shellfish farm near Homer, Alaska. We grow sugar and ribbon kelp as well as oysters and mussels in the pristine, nutrient rich waters of Kachemak Bay.

Farm Design | New Farm Design

GEAR AREA: 9.82 acres | FARM YIELD: 12,000 lbs. | APPROXIMATE SETUP COST: $23,261

SITE FACTORS | ARRAY OPTIONS | ANCHOR DETAILS | GROWLINE DETAILS | MARKER BUOYS | GEAR SELECTION

FARM DIAGRAM | PERMITTING RESOURCES | GEAR & SETUP BUDGET

Site Factors

SITE DIMENSIONS

You can modify the length and width of your site. If you entered your size in acres, we have calculated these for you based on what is optimal for your farm. **We'll let you know if the farm you design exceeds these dimensions below.**

Length: 634 ft.

Width: 687 ft.

SITE AREA

This is the area of your farm based on the dimensions above.

10 acres

BOTTOM TYPE

The type of sediment found on the ocean bottom at your farm's site area.

Sand

CURRENT VELOCITY

The average speed of the peak daily current.

1.5 knots

WATER CLARITY

How far down light penetrates through the water column.

4 ft.

WATER DEPTH

Mean Low Low Water (MLLW) is the height of the lowest tide recorded at a tide station each day, averaged over a long period of time.

Depth at low tide: 30 ft.

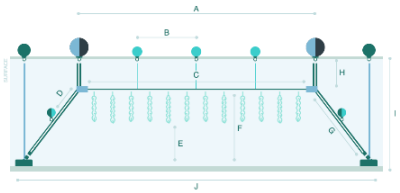
Depth at high tide: 36 ft.

Cross-Sectional Diagram

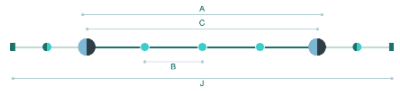
Anchor Line Buoy: A-2 | Anchor: Fluke | Retrieval Buoy Line: 3/8 inch

Retrieval Buoy: A-1 | Anchor Line: 1/2 inch | Tension Buoy: A-1

Growline: 3/8 inch | Growline Flotation Buoy: A-1 | Growline Flotation Buoy Line: 3/8 inch



Single-Line Array Design View



A: Growline Footprint 220 ft.

B: Growline Flotation Buoy Spacing 55 ft.

C: Growline Length 200 ft.

D: Tension Buoy Spacing 10 ft.

E: Kelp Clearance MLLW: 10 ft. MHW: 16 ft.

F: Growline Clearance MLLW: 26 ft. MHW: 32 ft.

G: Anchor Rode Length 160 ft.

H: Growline Depth 4 ft.

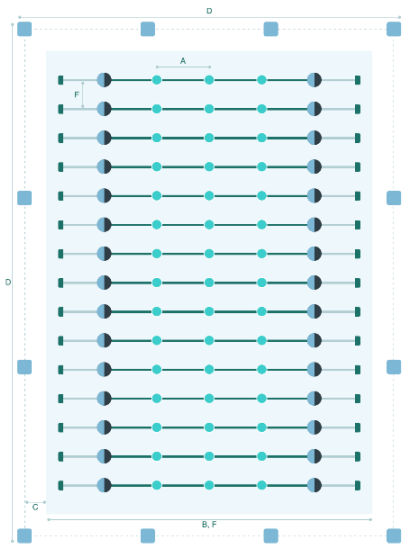
I: Water Depth MLLW: 30 ft. MHW: 36 ft.

J: Array Length 533.54 ft.

Farm Design View

Minimum Site Area | Gear Area | Growline

Regulatory Marker Buoy: 12"



A: Growline Flotation Buoy Spacing 55 ft.

B: Array Length 533.54 ft.

C: Regulatory Buffer 50 ft.

D: Minimum Site Area Length: 633.54 ft. Width: 675.00 ft.

E: Gear Area Length: 533.54 ft. Width: 575.00 ft.

F: Array Spacing 40 ft.

EXPORT AS PDF


9:41
2.5 Acres
Kelp Growth
All Species
Sugar Kelp
Alaria
Current Biomass
5 lbs
Carbon Removed
60 lbs
Nitrogen Removed
4.3 lbs
Growth Curve
200k lbs
100k lbs
0 lbs
60 days
since outplanting
10,000 lbs
total growth
20d
40d
60d
80d
Calculation Methodgy
Your Species
Home
Farm Log
Settings