



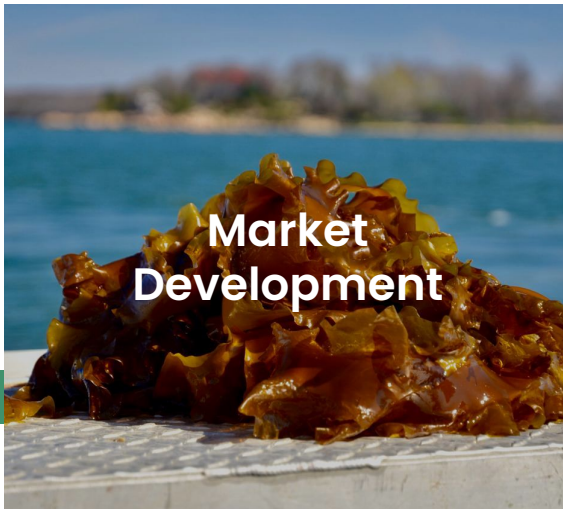
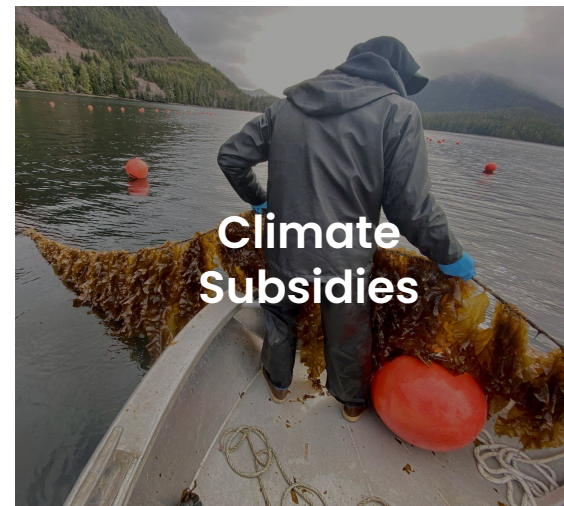
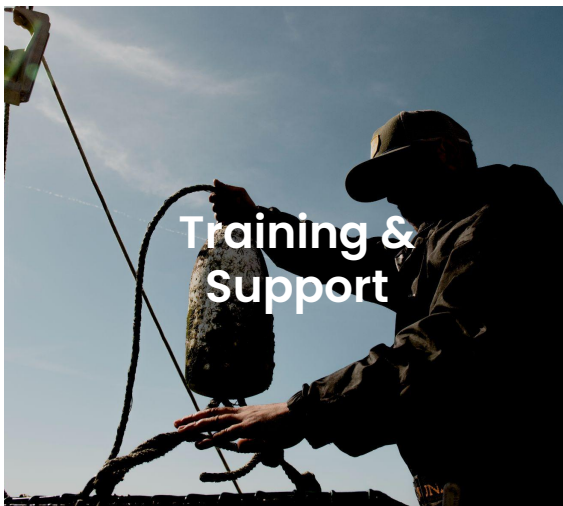
Turning the Tide:
**Building a Farmer-First
Blue Economy**



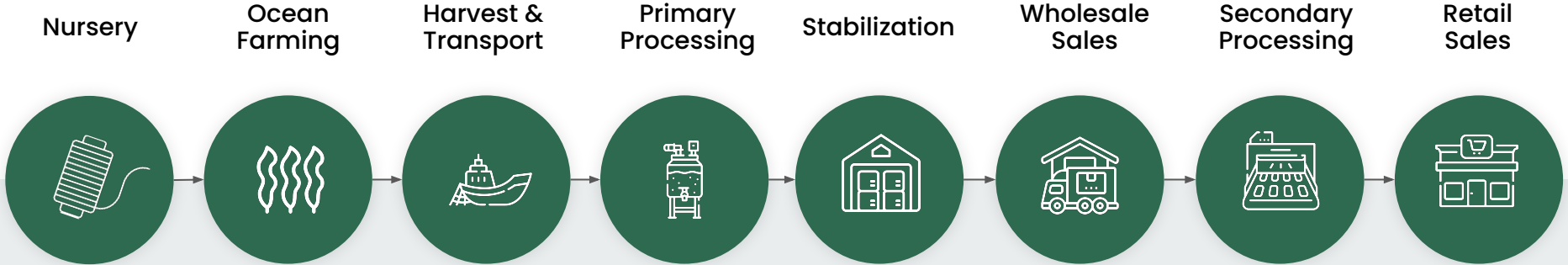
Sam Garwin
Director of Market Development



We train and support
regenerative ocean farmers
in the era of climate change



The Seaweed Value Chain



Raw Seaweed

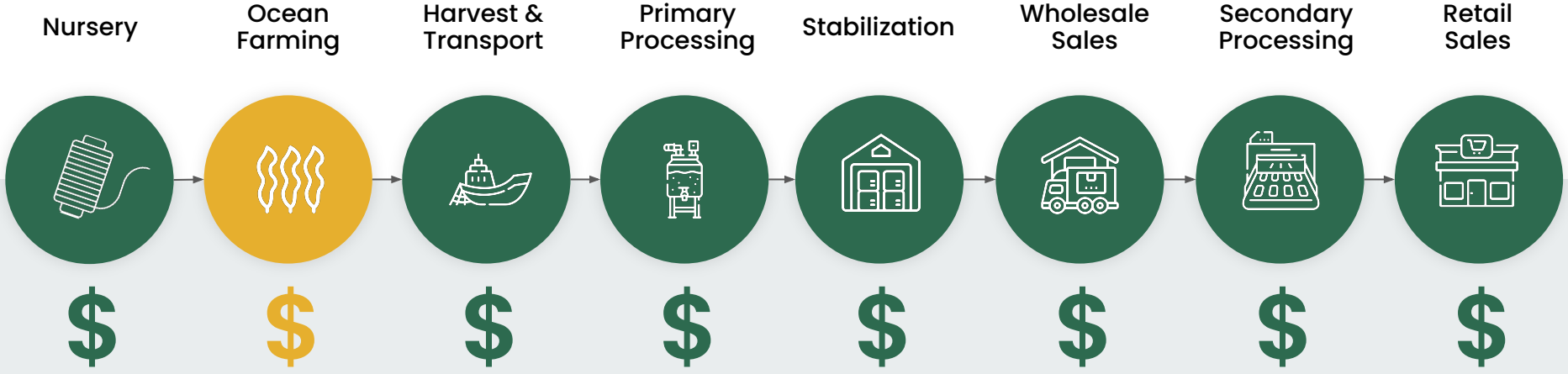


Stabilized Seaweed



Value-Added Products

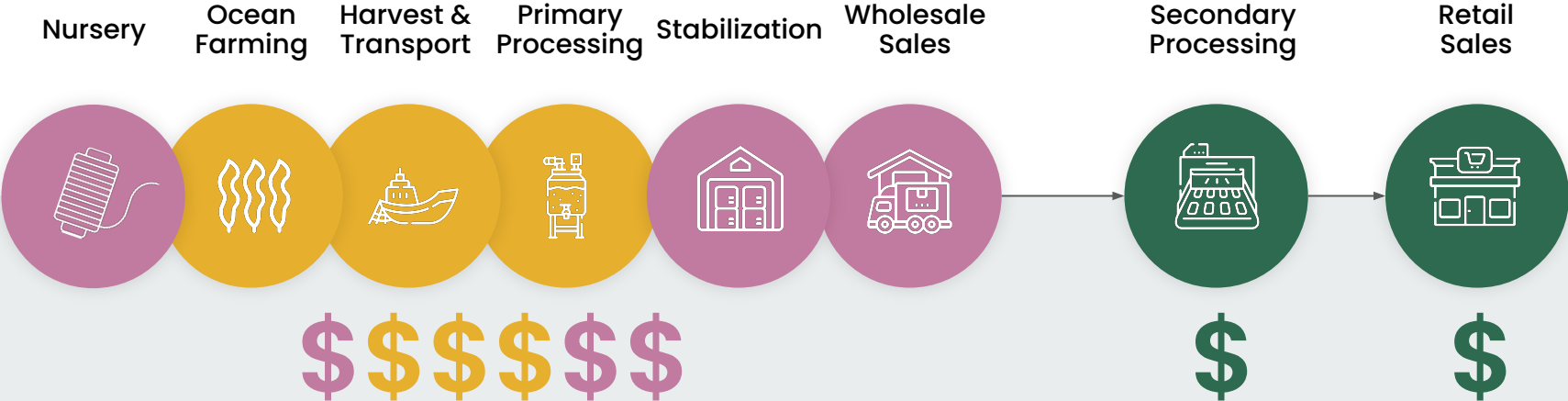
The Seaweed Value Chain



The Seaweed Value Chain



The Seaweed Value Chain



Challenge #1: Seed Supply



Farmer Challenges

- 1 Wild seed collection is increasingly unreliable
- 2 Late outplanting results in low yields and quality risks
- 3 Existing nurseries have limited capacity, and new nurseries are expensive to start

Solution: Low-Cost Nursery Redesign

$\frac{1}{3}$ the foot print, 2x the production capacity, $\frac{1}{2}$ the labor, $\frac{1}{3}$ the energy



Solution: Gametophyte Seed Banks



Source

Eliminate annual dependence on wild seed, and cost to acquire it



Supply

Year-round 'bulking' ensures consistent, reliable availability



Timing

Farmers time outplanting to optimize yield & quality



2023 Results



Spore Release Seed
OUTPLANTED 12/7/22 @ 48F



Gametophyte Seed
OUTPLANTED 11/1/22 @ 60F

2023 Results



Spore Release Seed
OUTPLANTED 12/21/22 @ 48F

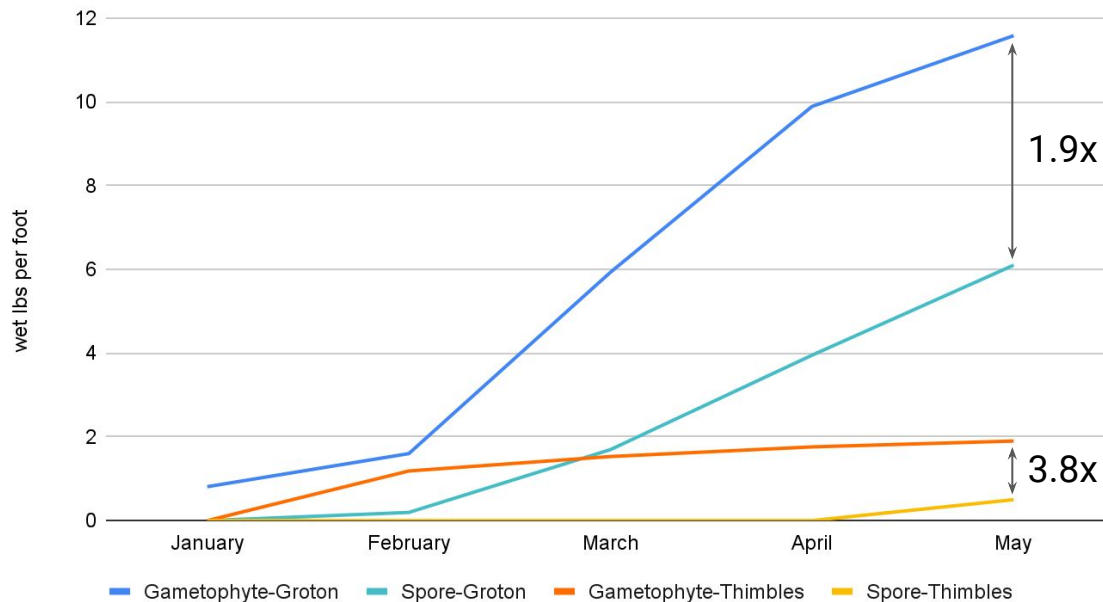


Gametophyte Seed
OUTPLANTED 11/1/22 @ 60F

2023 Results

1.9-3.8x growth on early-seeded gametophyte lines

Gametophyte vs. Spore Seed Yields 2023 Farm Season



Challenge #2: Stabilization



Farmer Challenges

- 1** Farmers can't earn a premium selling raw kelp
- 2** Processing is expensive, labor intensive, and application-specific
- 3** Cost-effective harvest volumes outstrip processing capacity

Solution: Ambient Temp. Stabilization

2023 Pilot – New Haven, CT

- Build a line to efficiently process fresh kelp into a 'slurry' format
- Evaluate Macro Oceans stabilization tech at pilot scale
- Develop a high-level business model that benefits farmers



macro
oceans



8/23/23

Solution: Cross-Regional Tech Transfer

2024 AFDF Joint Innovation Project

- Iterate on 2023 pilot design
- Deploy the line in Kodiak, AK
- Demo for 15 Alaskan farmers and solicit feedback to optimize for remote conditions
- Open-source the processing line design and operating parameters



Challenge #3: Sales Opportunities



Farmer Challenges

- 1** Critical pieces of the value chain are missing or under-developed
- 2** Sales cycles are often long, complex, and educational
- 3** Alignment on format and quality specs in addition to volume

Solution: Seaweed Source

The screenshot displays the GreenWave mobile application interface. At the top, it greets the user with "Hello Kriz!" and shows the GreenWave logo and profile name. A navigation bar on the left contains icons for home, search, and a user profile. The main area features a map of North America with several blue location pins, each accompanied by a person icon and a count (e.g., +3, +2, +5, +21). A "Filters" button is located in the top right of the map area. Below the map, there is a card for "New England Sea Farms" with a circular logo, the text "New England Sea Farms", and the location "Guilford, CT". To the right of this card is a promotional message: "Need support finding a supplier or making a sale? We're here to help you find key partners to grow your business." Below this message is a green button labeled "CONTACT GREENWAVE". At the bottom of the screen, there are navigation arrows and a circular icon with the letter "K".

Solution: Seaweed Source




SEAWEED SOURCE

Where supply meets demand

A space for seaweed farmers, hatcheries, processors, and buyers to connect, interact, and grow.

[APPLY NOW →](#)

Brought to you by:  GREENWAVE

Solution: Seaweed Source



Ocean's Balance

Seed provider, seaweed purchaser, processor.

What we do



Purchase Seaweed



Produce Seed



Grow Seaweed



Process Seaweed

What we supply

Seaweed



Skinny Kelp

Saccharina angustissima



Sugar Kelp

Saccharina latissima



Alaria

Alaria spp.

Other Species:

Dulse (*Palmaria spp.*)

Sea Lettuce (*Ulva spp.*)

Irish Moss (*Chondrus spp.*)

Atlantic Nori (*Porphyra spp.*)



Capacity Not Reported

Format

whole seaweed

milled

flaked

powdered

Stability

fresh

dried

frozen

Spools



Skinny Kelp

Saccharina angustissima



Sugar Kelp

Saccharina latissima



Capacity Not Reported

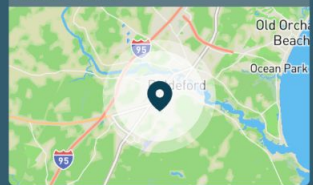
Order Timing

Orders for seed can be placed any time of year, but fulfillment will depend on seasonal availability.

SEND MESSAGE



Biddeford, ME, US



Solution: Seaweed Source

Find Partners

All My company **Filters**

Activity

- Produces Seed
- Grows Seaweed
- Processes Seaweed
- Purchases Seaweed

Species

- Sugar Kelp**
Saccharina latissima
- Skinny Kelp**
Saccharina angustissima
- Alaria**
Alaria spp.
- Bull Kelp**
Nereocystis luetkeana
- Giant Kelp**
Macrocystis

Capacity

Select an activity to choose a capacity.

Formats

- Whole Seaweed
- Stipe Only
- Blade Only
- Cut
- Pureed
- Milled
- Flaked
- Powdered
- Extracted
- Blanched

Stabilities

- Fresh
- Frozen
- Dried
- Fermented
- Ensilied
- Refined

CLEAR ALL **SHOW 38 RESULTS**

SHOW LIST

Map labels: Bering Sea, North Pacific Ocean, North Atlantic Ocean, Iceland, Mexico, Guatemala, Cuba.

Solution: Seaweed Source

The screenshot displays a web application interface for 'Listings'. At the top, there is a navigation bar with a home icon, the word 'Listings', a '+ CREATE LISTING' button, and search and notification icons. Below the navigation bar, there are tabs for 'All', 'Saved', and 'My listings'. The 'All' tab is selected. On the right side of the listing area, there is a 'Sort by Latest' dropdown and a 'FILTERS 2' button. The main content area shows three listing cards. Each card has a status label (e.g., 'For Sale', 'Service Offered', 'Purchase Request'), a title, a company name, a location, and a listing date. To the right of the listings is a map of North America with several location pins, each marked with a '6'. The map includes labels for 'Arctic Ocean', 'Baffin Bay', 'Northwestern Passages', 'Canada', 'United States', 'Mexico', 'Guatemala', 'Cuba', 'Puerto Rico', and 'Caribbean Sea'. A 'Expand Map' button is located at the top left of the map.

Listings + CREATE LISTING

All Saved My listings Sort by Latest FILTERS 2

For Sale

Looking for fresh or dried Connecticut Sugar kelp

Blue Evolution | Broad City, Maine | Listed: Dec 09

Service Offered

Tellus sociis amet fermentum fames porta ornare pellentesque.

The Seaweed Company | Broad City, Maine | Listed: Dec 09

Purchase Request

Amet malesuada curabitur venenatis neque placerat adipiscing.



Looking Ahead

What's Next



Farmer mentorship program



Replication of 2 low-cost nurseries in CT



Mobile stabilization infrastructure for Southern New England



Programs and resources to establish forward contracting best practices



Farmer cooperative development support

Collaboration is the way forward



Infrastructure Investments

Require pooling resources: capital, labor, and equipment



Meeting Demand

Requires coordinated management of supply, quality, and customers



Building an Equitable Industry

Requires developing and holding each other accountable to a unified vision and values



www.greenwave.org



[/hub](#)



[/seaweed-source](#)

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[@GreenWaveOrg](#)