



LAZY  
POINT  
FARMS

GROWING KELP, GROWING CHANGE:  
A CURRICULUM FOR SUSTAINABLE SOLUTIONS

Made possible by The Moore Family Charitable Foundation  
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# INTRODUCTION

## MISSION

Lazy Point Farms (LPF) empowers classrooms to support the burgeoning kelp industry in New York State through its educational expertise. This curriculum serves as a dynamic tool for fostering critical thinking and environmental awareness in learners of all ages, drawing upon the Founder's extensive background in education.

## SUMMARY

This curriculum immerses students of any age in a multi-week exploration of sugar kelp farming in New York State. Students engage with the full spectrum of the industry, delving into end-uses, challenges, economic and environmental benefits, and career pathways. By the end, empowered with local connections, students can choose their own path to contribute meaningfully, be it through advocacy, aquaculture, farming, markets, or processing. The curriculum embraces interdisciplinarity, weaving real-world issues into lessons across writing, speaking, epistemology, argumentation, reflection, science, local government, economics, markets, and climate justice.

## GOALS

Learners will:

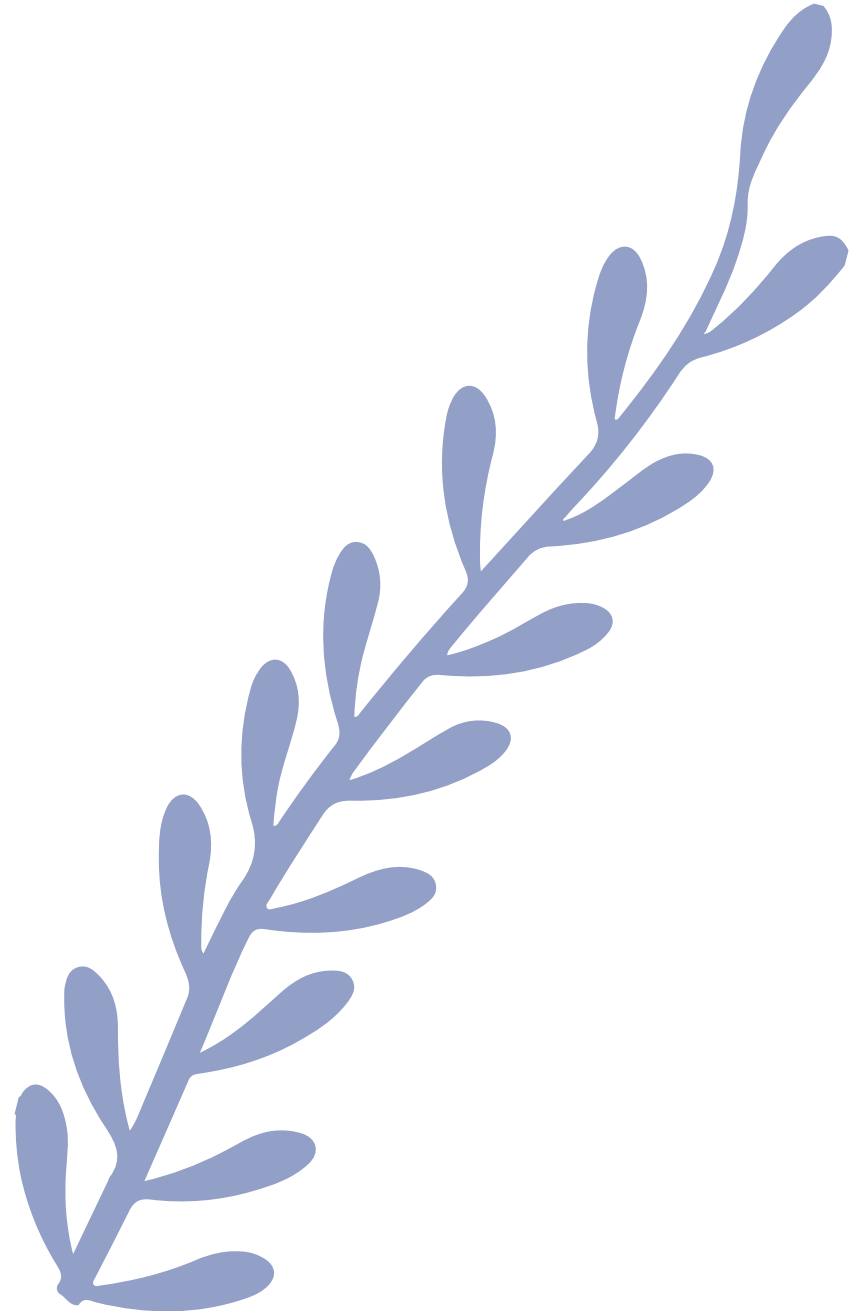
- Examine and refine their understanding of macroalgae through a holistic lens.
- Develop critical thinking skills and apply them to various issues surrounding the industry.
- Reflect on their learning journey and identify avenues to make a personal difference.
- Strengthen their ability to formulate effective questions that drive independent learning.

Teachers will:

- Foster a dynamic learning environment that facilitates active student engagement and collaboration.
- Make student learning and progress visible through diverse assessment strategies.

## VISION

LPF aims to serve as a vibrant hub for kelp education. In the short term, teachers can implement lessons and showcase student projects on a dedicated platform on [lazypointfarms.org](http://lazypointfarms.org). Over time, the curriculum will evolve into a living resource moderated by LPF, facilitating connections among teachers, students, and industry professionals. This collaborative environment will empower teachers to build upon existing work and inspire innovative projects. LPF envisions fostering “pods” of schools to collaborate on large-scale projects, micro-funding potentially available through LPF. Ultimately, our vision is to empower learners to actively participate in shaping the future of the kelp industry, drawing inspiration and knowledge from industry professionals themselves.



# ELEMENTS OF THE CURRICULUM

## 1. Interdisciplinary Learning:

The proposed lessons embrace a truly interdisciplinary approach, seamlessly weaving together various subjects such as science, writing, speaking, and social studies. This holistic perspective allows students to gain a deeper understanding of the complex issues surrounding kelp farming.

## 2. Flexibility and Adaptability:

Designed for maximum flexibility and adaptability, these lessons can be easily modified to fit the needs of students from grades 3-12. Teachers can choose to:

- Utilize individual lessons as springboards for deeper exploration.
- Expand upon existing lessons to create more complex lessons.
- Build entire lesson series around specific topics.
- Tailor lessons to specific learning standards.

This flexibility ensures that the curriculum can be used effectively in diverse classroom environments, regardless of location or student age.

## 3. Community Engagement and Advocacy:

Beyond academic learning, the curriculum emphasizes real-world application and encourages students to become active participants in their communities.

Students are empowered to:

- Engage with community members and stakeholders.
- Explore the potential benefits and challenges of kelp farming in their local area.
- Develop and advocate for solutions that promote sustainability and environmental responsibility.

The culmination of the lessons is a student-led presentation, where they can share their findings and recommendations with the community, fostering meaningful dialogue and potential action.

## 4. Collaborative Learning and Community Building:

The curriculum fosters a collaborative learning environment by providing opportunities for teachers and students to connect with others who are also exploring kelp farming. Through LPF, educators can:

- Share lesson plans and resources with each other.
- Learn from the experiences of other teachers.
- Collaborate on projects and initiatives.
- Create a vibrant community of learners and experts.

This collaborative approach fosters a sense of shared responsibility and empowers teachers to continuously improve their practice.

### **5. Built-in Support System:**

LPF is committed to providing ongoing support to educators using the curriculum. This includes:

- Connecting teachers with experts in the field.
- Facilitating communication and collaboration between teachers.
- Providing guidance on modifying lessons for different grade levels and learning standards.
- Offering ongoing support for implementation and design.

This comprehensive support system ensures that teachers have the resources and assistance they need to effectively implement the curriculum and maximize its impact on students.

### **6. Continuous Improvement and Growth:**

LPF is committed to continually improving and expanding the curriculum based on feedback from educators and users. This includes:

- Adding new lesson ideas and questions.
- Refining existing materials based on experience.
- Keeping the curriculum up-to-date with the latest advancements in help farming.

This dynamic approach ensures that the curriculum remains relevant and engaging for learners of all ages.

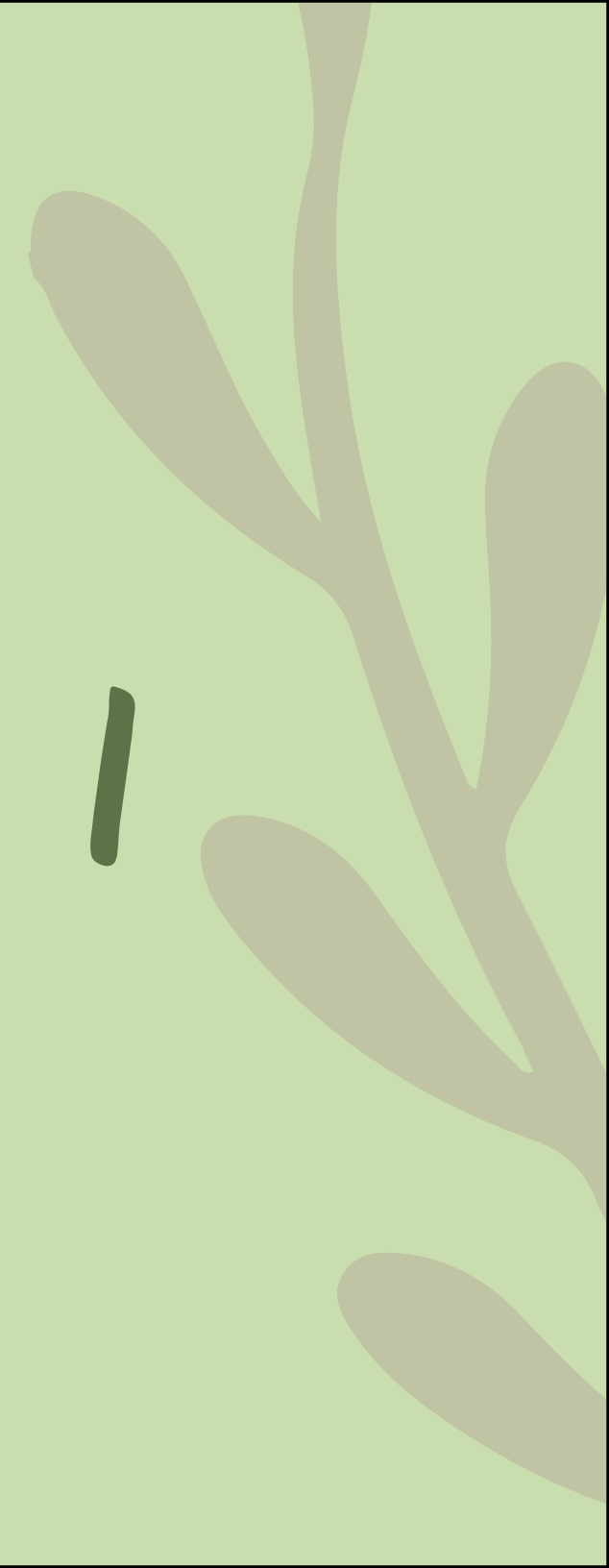
### **7. Structure and Flexibility:**

The curriculum consists of seven lessons that can be used in various ways:

- Sequentially, building upon one another for a comprehensive learning experience.
- Individually, to address specific topics or interests.
- Rearranged, to fit the specific needs of a class or project.

The final lesson acts as a reflective piece, preparing students for their community-based presentation. This reflective approach encourages students to synthesize their learning and apply it to real-world scenarios.

# LESSON 1



# KELP'S REMARKABLE VERSATILITY

**Estimated Duration: 1 day (3-4 hours)**

## **Overview:**

This lesson will introduce educators to the amazing diversity of uses and benefits of sugar kelp (*Saccharina latissima*), a species of brown algae gaining traction in the aquaculture industry. It will challenge educators to consider the potential of kelp farming in New York and its implications.

## **Learning Objectives:**

- Participants will gain a comprehensive understanding of the various uses and benefits of sugar kelp, including food, fuel, animal feed, environmental remediation, and more.
- Participants will be able to analyze the potential impact of kelp farming on the New York economy and environment.
- Participants will develop an informed position on the question of whether or not kelp farming should be encouraged in New York.

- Participants will explore resources and strategies for incorporating kelp education into their classrooms.

## **Materials:**

- Whiteboard or projector
- Markers or pens
- Sticky notes
- Handouts with information about sugar kelp (including its uses, benefits, and potential impact)
- Internet access for research
- Optional: Video conferencing equipment for guest speaker

## **Preparation:**

1. Research various uses and benefits of sugar kelp, including recent advancements and innovations.
2. Prepare a list of resources and websites for participants to explore.

3. If possible, arrange a video conference with someone in the kelp industry who can share their experiences and insights.
4. Prepare copies of the handouts and any other materials needed for the lesson.

## **Lesson Plan:**

### **INTRODUCTION (30 MINUTES):**

1. Brainstorming: Begin by asking participants what they know about seaweed. Then, ask them to list as many uses for seaweed as possible.
2. Introduction to sugar kelp: Briefly explain what sugar kelp is and why it is gaining interest in the aquaculture industry.
3. Exploring the versatility of kelp: Present the different uses and benefits of sugar kelp, using visuals and engaging examples. This could include:
  - Food and beverage production
  - Animal feed
  - Biofuel production
  - Environmental remediation (water purification, carbon sequestration)
  - Cosmetics and pharmaceuticals
  - Building materials
  - Packaging and textiles

### **FORMING A POSITION (60 MINUTES):**

1. Independent reflection: Ask participants to write down their initial position on the question: Should sugar kelp and other forms of seaweed be grown and farmed in New York?
2. Small group research: Divide participants into small groups and provide each group with resources and websites to research the potential impact of kelp farming in New York. This could include:
  - Economic benefits and job creation
  - Environmental impacts (positive and negative)
  - Regulatory and policy considerations
  - Social and cultural implications
3. Group discussion: Have each group share their findings and discuss the potential benefits and challenges of kelp farming in New York. Encourage critical thinking and debate.

### **REVISION AND REFLECTION (60 MINUTES):**

1. Individual reflection: Ask participants to revisit their initial position on kelp farming. Have they changed their opinion? Why or why not?
2. Revision: Ask participants to revise their initial statement taking into account their newfound knowledge and perspectives.





*Photo: Lazy Point Farms co-founder Justin Moore processing kelp for agricultural use*

3. Community connection: If possible, host a video conference with someone in the kelp industry who can answer questions and share their experiences.
4. Resource sharing: Share resources and strategies for incorporating kelp education into various subject areas and grade levels.

- Enthusiasm and engagement in exploring kelp education resources

### **CONCLUSION (30 MINUTES):**

1. Wrap-up: Briefly summarize the key points of the lesson and answer any remaining questions.
2. Sharing and collaboration: Encourage participants to share their student work, reflections, and insights with Lazy Point Farms and other educators. This can be done through a dedicated platform on [lazypointfarms.org](http://lazypointfarms.org) or other online forums.
3. Looking forward: Discuss potential next steps, such as implementing kelp-related projects in classrooms, connecting with local kelp growers, and advocating for policies that support the industry.

### **ASSESSMENT:**

- Participation in class discussions and activities
- Completion of research assignments and revisions
- Content and clarity of written reflections

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# LESSON II

# KELP'S CYCLE IN A CHANGING CLIMATE

**Estimated Duration: 1 day (3 hours)**

## **Overview:**

This lesson delves into the fascinating life cycle of kelp, focusing on the cultivation and aquaculture aspects of this marine protist. It explores the challenges and opportunities associated with growing kelp in New York's changing climate.

## **Learning Objectives:**

- Participants will gain a comprehensive understanding of the life cycle of kelp, including the stages of gametophytes, sporophytes, and adults.
- Participants will learn about the process of kelp cultivation and aquaculture, specifically focusing on local challenges and adaptations.
- Participants will analyze the impact of climate change on kelp growth and explore potential solutions and innovations.
- Participants will develop strategies for incorporat-

ing kelp life cycle and aquaculture education into their science and biology curriculum.

## **Materials:**

- Whiteboard or projector
- Markers or pens
- Handouts with information about kelp life cycle and aquaculture (including diagrams, photos, and key terms)
- Internet access for research
- Optional: Video conferencing equipment for expert speaker

## **Preparation:**

1. Research the life cycle of kelp and the process of kelp cultivation, focusing on local challenges and adaptations in New York.
2. Prepare a list of resources and websites for participants to explore for further information.



*Photo: Closeup of sugar kelp sporophytes under the microscope at Hart Hatchery*

3. If possible, arrange a video conference with a water quality expert or a researcher specializing in nitrogen's role in kelp growth.
4. Prepare copies of the handouts and any other materials needed for the lesson.

## **Lesson Plan:**

### **INTRODUCTION (30 MINUTES):**

1. Activating prior knowledge: Begin by asking participants what they already know about seaweed and kelp. Discuss the different types of seaweed and their characteristics.
2. Introducing the kelp life cycle: Present a visual overview of the kelp life cycle, highlighting the different stages and their environmental requirements.
3. Exploring the concept of cultivation: Explain what aquaculture is and its role in kelp production. Discuss the various methods used for cultivating kelp, including longlines and rafts.

### **CULTIVATION AND LOCAL CHALLENGES (60 MINUTES):**

1. Virtual hatchery visit: If possible, arrange a virtual tour of a local kelp hatchery. If not, show videos and pictures of the hatchery facilities and equipment.
2. Expert speaker: Have the water quality expert or

nitrogen researcher present their insights on how water quality and nutrient availability impact kelp growth.

3. Discussion and analysis: Facilitate a discussion about the challenges and opportunities associated with kelp cultivation in New York. Encourage participants to consider the implications of climate change, water quality, and nutrient levels.

### **REFLECTING AND EXPANDING KNOWLEDGE (60 MINUTES):**

1. Independent research: Allocate time for participants to conduct independent research on topics of interest related to kelp life cycle and aquaculture. This could include:
  - The impact of climate change on kelp growth
  - Innovative methods for kelp cultivation
2. Open discussion: Share research findings and engage in a discussion about potential solutions and innovations for overcoming challenges in kelp cultivation.

### **CONCLUSION (30 MINUTES):**

1. Review and key takeaways: Briefly summarize the main points covered during the lesson.
2. Sharing and collaboration: Encourage participants to share their student work, reflections, and insights with Lazy Point Farms and other educators. This can be done through a dedicated

platform on [lazypointfarms.org](http://lazypointfarms.org) or other online forums.

**ASSESSMENT:**

- Participation in class discussions and activities
- Completion of research assignments and reflections
- Comprehension of key concepts related to kelp life cycle and aquaculture
- Creativity and enthusiasm in exploring solutions and projects



# LESSON III



# KELP'S POWER TO CLEAN WATER: EXPLORING WATER QUALITY IMPROVEMENT

**Estimated Duration: 1 day (3 hours)**

## **Goal:**

This lesson will explore how kelp can improve water quality and its potential impact on our waterways.

## **Location:**

In the classroom or on-site at a local water quality monitoring facility or academic institution, lab (optional)

## **Community Connection:**

Water quality facility, academic institution/lab

## **Learning Objectives:**

- Participants will understand the major water quality issues facing our waterways.
- Participants will learn how kelp can improve water quality through various mechanisms, including

nutrient absorption

- Participants will analyze the potential impact of large-scale kelp cultivation on water quality in their local area
- Participants will develop informed arguments and reflections regarding the potential of kelp as a natural solution for water quality improvement.

## **Materials:**

- Whiteboard or projector
- Markers or pens
- Handouts with information about water quality, kelp biology, and the relationship between the two (including diagrams, photos, and key terms)
- Internet access for research

## **Advance Preparation:**

1. Research local water quality issues and identify

potential sources of pollution.

2. Invite a representative from a local water quality facility or academic institution with expertise in kelp research or water quality monitoring to participate in a Q&A session with students.
3. Encourage students to draft questions for the expert beforehand on topics related to local water quality and the potential of kelp.
4. Prepare copies of the handouts and any other materials needed for the lesson.

## **Lesson Plan:**

### **INTRODUCTION (60 MINUTES):**

1. Brainstorming: Begin by asking participants what they know about water quality and its importance for healthy ecosystems. Discuss the major water quality issues facing their local waterways.
2. Understanding water quality: Provide an overview of key water quality parameters
3. Explain how these parameters are impacted by pollution and human activities.
4. Introducing kelp's role: Introduce kelp as a natural solution for water quality improvement. Discuss how kelp absorbs nutrients, filters water, and increases dissolved oxygen levels.

### **Q&A WITH EXPERT (60 MINUTES):**

1. Guest speaker: Welcome the expert and invite them to share their insights on the local water quality issues and the potential of kelp as a remediation strategy.
2. Student questions: Facilitate a Q&A session where students can ask their prepared questions and delve deeper into specific topics of interest.
3. Case study: Discuss a case study of a successful kelp cultivation project implemented to improve water quality in another region. Analyze the challenges faced and the lessons learned.

### **REFLECTION AND DISCUSSION (60 MINUTES):**

1. Independent reflection: Provide time for students to reflect on their learning and consider the potential impact of kelp cultivation on local water quality. Encourage them to consider the following questions:
  - How much kelp would we need to grow to make a significant impact on water quality?
  - What are the challenges and opportunities for implementing large-scale kelp cultivation in our area?
  - What role can individuals and communities play in supporting kelp-based water quality solutions?
2. Argument and reflection: Ask students to revisit



*Photo: Cornell Cooperative Connection staff monitor water quality adjacent to a kelp farm*

their arguments and reflections from previous lessons, incorporating their newfound knowledge about kelp and water quality. Encourage them to refine their positions and strengthen their arguments based on evidence and research.

3. Post-class collaboration: Discuss the possibility of collaborating with another local classroom working on using dried kelp to make biochar for water cleaning. Encourage students to connect, share their learning experiences, and explore potential joint projects.

#### **CONCLUSION (30 MINUTES):**

1. Review and key takeaways: Briefly summarize the main points covered during the lesson and emphasize the importance of water quality and the potential of kelp as a natural solution.
2. Sharing and collaboration: Encourage participants to share their student work, reflections, and insights with Lazy Point Farms and other educators.
3. Next steps: Discuss potential next steps, such as:
  - Conducting independent research projects on local water quality and kelp cultivation
  - Organizing community clean-up events or educational workshops
  - Advocating for policies that support kelp farming and water quality improvement initiatives

#### **ASSESSMENT:**

- Participation in class discussions and Q&A session
- Completion of reflection prompts and argument development
- Comprehension of key concepts related to water quality and kelp's role
- Creativity and critical thinking in analyzing challenges and proposing solutions

#### **EXTENSION ACTIVITIES:**

- Analyze water samples from local water bodies to compare and contrast their quality.
- Design and build a model of a kelp farm or a water filtration system using kelp.
- Research and present on the economic and social benefits of kelp-based water quality solutions.
- Develop a public awareness campaign about the importance of clean water and the potential of kelp.
- Organize a letter-writing campaign to local government officials

The background is a light green color with several large, organic, abstract shapes. On the left side, there are three large, rounded green shapes of varying sizes. On the right side, there is a large, brown, branch-like shape with several rounded, leaf-like protrusions extending from it.

# LESSON IV

# BUILDING A FUTURE WITH KELP: INNOVATION, CHALLENGES, & RESPONSIBLE USE

**Estimated Duration: 1 day (3 hours)**

## **Goal:**

This lesson will explore the diverse end uses of kelp and its application in beauty products, fabrics, soil amendment, plastics, considering the limitations and potential risks associated with its use.

## **Location:**

Zoom or classroom

## **Community Connection:**

- Zoom Call 1: Expert studying sugar kelp as an end use (e.g., Keel Labs, Algiknit, Macro Oceans, etc.)
- Zoom Call 2: Kelp grower facing challenges with end uses (e.g., RETI Center)

## **Learning Objectives:**

- Participants will gain an understanding of the marketing, chemistry, and communication strategies involved in launching kelp end products.
- Participants will analyze the relationship between kelp growth location and its suitability for specific end uses.
- Participants will explore the potential risks associated with heavy metal contamination and iodine levels in kelp products
- Participants will develop informed opinions on the ethical obligations of companies to disclose kelp content and potential risks.

## **Materials:**

- Whiteboard or projector
- Markers or pens
- Handouts with information about kelp, beauty product marketing, and heavy metal/iodine/contaminant concerns



*Alice Jenks and Dr. Amanda Shore, a microbiologist at Farmingdale State College sample kelp grown in the Long Island region*

- Internet access for research

### **Advance Preparation:**

1. Research the current market for kelp products and identify key trends and challenges.
2. Prepare a list of marketing and communication strategies commonly used in the industries.
3. Research potential risks associated with heavy metal contamination and iodine levels in kelp.
4. Invite two experts for separate Zoom calls:
  - A representative from a company utilizing “clean” kelp for their products.
  - A kelp grower facing challenges with end uses for their “dirty” kelp.
5. Prepare talking points with both experts to ensure key information is covered during the calls.
6. Encourage students to prepare questions for the experts beforehand.
7. Prepare copies of the handouts and any other materials needed for the lesson.

### **Lesson Plan:**

#### **INTRODUCTION (60 MINUTES):**

1. Brainstorming: Begin by brainstorming what

participants know about kelp and its potential uses. Discuss the growing popularity of kelp in various end use products.

2. Marketing and chemistry: Introduce the key concepts of marketing and communication in various industries. Briefly explain the chemistry of kelp and its potential benefits for a variety of end uses.
3. Heavy metals and iodine: Discuss the potential risks associated with heavy metal contamination and iodine levels in kelp. Provide information about regulations and testing procedures.

#### **ZOOM CALL 1: “CLEAN” KELP END USE (60 MINUTES):**

1. Expert presentation: Welcome the representative and invite them to share their insights on the process of sourcing “clean” kelp, quality control measures, and the application of kelp in their products.
2. Q&A session: Facilitate a Q&A session where students can ask their prepared questions and delve deeper into specific topics.
3. Case study: Discuss the expert’s company as a case study, analyzing their marketing strategies and communication channels.

#### **ZOOM CALL 2: “DIRTY” KELP CHALLENGES (60 MINUTES):**

1. Grower presentation: Welcome the kelp grower



and invite them to share their experiences and challenges in finding suitable end uses for their “dirty” kelp.

2. Q&A session: Facilitate another Q&A session to gain insights into the grower’s perspective and potential solutions for utilizing “dirty” kelp.
3. Analysis and discussion: Encourage students to analyze the challenges faced by the grower and consider potential research projects or partnerships with universities or research institutions.

#### **REFLECTION AND DISCUSSION (60 MINUTES):**

1. Independent reflection: Provide time for students to reflect on the information presented and consider the following questions:
  - What limitations should be considered when using kelp for specific end uses?
  - What ethical obligations do companies have regarding transparency and disclosing kelp content and potential risks?
  - How do regulations and standards vary across different industries (e.g., beauty vs. food)?
2. Argument and refinement: Ask students to revisit their arguments and reflections from previous lessons, incorporating their new knowledge about kelp extract oil and its applications. Encourage them to refine their positions and strengthen their arguments based on evidence and research.

3. Collaboration potential: Discuss the potential for connecting with the FIT team working on a kelp nonwoven backsheet and oyster shell super-absorbent polymer projects. Explore potential synergies and opportunities for collaboration.

#### **CONCLUSION (30 MINUTES):**

1. Review and key takeaways: Briefly summarize the main points covered during the lesson and emphasize the importance of responsible and informed use of kelp.
2. Sharing and collaboration: Encourage participants to share their student work, reflections, and insights with Lazy Point Farms and other educators.

The background features abstract, organic shapes. On the left, there are grey, leaf-like or branch-like forms extending from the bottom left towards the center. On the right, there are large, light blue, teardrop-shaped forms extending from the top right towards the center. The overall style is minimalist and modern.

# LESSON V

# ASPIRING KELP GROWERS: NAVIGATING MOTIVATIONS, CHALLENGES & OPPORTUNITIES

**Estimated Duration: 1 day (3 hours)**

the potential of kelp farming as a sustainable and viable industry.

## **Overview:**

This lesson will delve into the motivations and challenges aspiring and established commercial kelp growers face. It will explore the environmental and economic aspects of kelp farming, providing students with a holistic understanding of this emerging industry.

## **Goal:**

- Understand the motivations and aspirations of commercial kelp growers.
- Connect with a local kelp grower to gain firsthand insights into the challenges and opportunities of kelp farming.
- Analyze the environmental and economic considerations associated with commercial kelp production.
- Develop informed opinions and reflections on

## **Location:**

Zoom or in person (depending on feasibility and availability)

## **Community Connection:**

Talk with a local kelp grower.

## **Advance Preparation:**

1. Research the current state of the commercial kelp farming industry, including its growth, challenges, and future prospects.
1. Prepare a list of questions for the kelp grower, focusing on their motivations, experiences, challenges, and successes.
2. Agree upon a set of key talking points with the kelp grower to ensure essential information is



*Sue Wicks of Violet Cove Oyster grows sugar kelp alongside shellfish*

covered during the session.

3. Encourage students to develop their own questions for the grower.
4. Prepare materials for note-taking and reflection.

## **Lesson Plan:**

### **PREPARATION (60 MINUTES):**

1. Introduction: Briefly introduce the lesson and discuss the growing interest in commercial kelp farming.
2. Motivations and aspirations: Facilitate a brainstorming session to explore potential motivations for individuals to pursue kelp farming as a career.
3. Challenges and opportunities: Discuss the anticipated challenges and opportunities associated with commercial kelp farming, including environmental considerations, economic viability, and market demand.
4. Question development: Allocate time for students to refine their individual questions for the kelp grower.

### **GROWER INTERACTION (60 MINUTES):**

1. Welcome and introductions: Introduce the kelp grower and provide a brief overview of their farm and experience.

2. Grower presentation: Invite the grower to share their story, focusing on their motivations for starting a kelp farm, the challenges they face, and their vision for the future.
3. Q&A session: Facilitate a question-and-answer session where students can ask their prepared questions and delve deeper into specific interests.
4. Open discussion: Encourage open discussion and reflection on the topics covered, allowing students to clarify points and share their insights.

### **REFLECTION AND SYNTHESIS (60 MINUTES):**

1. Independent reflection: Provide time for students to reflect on their learning and consider the following questions:
  - What surprised you most about the kelp grower's experience?
  - What are the biggest challenges facing commercial kelp growers?
  - What are the potential benefits of kelp farming for the environment and economy?
2. Argument and reflection: Ask students to revisit their arguments and reflections from previous lessons, incorporating their newfound knowledge about commercial kelp farming. Encourage them to refine their positions, address specific challenges, and propose potential solutions.

3. Finalization and sharing: Encourage students to finalize their argument and reflections into a written or oral statement.
4. Uploading to LPF: Share completed work with Lazy Point Farms and other educators through the designated platform to connect, share insights, and foster collaboration.

**HOMEWORK/END OF CLASS:**

- Upload your final statement or reflection to LPF.
- Consider engaging in additional research or contacting the grower for further questions.

**ASSESSMENT:**

- Participation in class discussions and activities
- Completion and quality of reflection/argument statement
- Depth of understanding of the motivations, challenges, and potential of commercial kelp farming
- Creativity and critical thinking in analyzing information and proposing solutions

**EXTENSION ACTIVITIES:**

- Develop a business plan for a hypothetical commercial kelp farm.

- Research and propose solutions for specific challenges facing the kelp farming industry.
- Create an educational campaign to raise awareness about the benefits of kelp farming.
- Interview other stakeholders in the kelp industry (e.g., processors, consumers, policymakers) to gain diverse perspectives.
- Organize a visit to a local kelp farm for hands-on learning and observation.



# LESSON VI



# NAVIGATING KELP REGULATIONS AND ADVOCACY

**Estimated Duration: 1 day (3 hours)**

## **Overview:**

This lesson will explore the regulatory landscape surrounding kelp cultivation and connect students with local government officials to understand their perspectives and roles in supporting the industry. They will analyze community feedback and develop informed positions on kelp regulations and potential advocacy strategies.

## **Goal:**

- Understand the existing regulations and permitting processes involved in kelp farming.
- Connect with local government officials to gain insights into their perspectives on kelp and their capacity to support the industry.
- Analyze community feedback and assess public sentiment towards kelp cultivation.
- Develop informed opinions and advocate for policies that support the responsible growth of

the kelp industry.

## **Location:**

Zoom or in person at the local government agency office (depending on feasibility)

## **Community Connection:**

- Local government official: Engage with a government official who has the authority to influence kelp regulations and policies.
- Community survey: Conduct a survey or poll to gather public opinion and concerns regarding kelp cultivation in the local area.

## **Advance Preparation:**

1. Research the current regulations and permitting processes affecting kelp cultivation in your region.
2. Prepare a list of questions for the government official, focusing on:



- Their stance on kelp cultivation and its potential benefits for the community.
  - Specific ways the government can support the industry through policies, incentives, or infrastructure.
  - Challenges they face in supporting kelp initiatives.
3. Select a local government official and schedule a meeting or Zoom call.
  4. Encourage the official to visit Lazy Point Farms website to gain a deeper understanding of kelp cultivation practices and potential benefits.
  5. Design and conduct a survey or poll to gauge community sentiment towards kelp farming.
  6. Prepare materials for note-taking, reflection, and statement development.

## Lesson Plan:

### PREPARATION & STATEMENT DEVELOPMENT (60 MINUTES):

1. Review of regulations: Briefly discuss the existing regulations and permitting processes for kelp farming in your region.
2. Community sentiment: Analyze the results of the community survey or poll to understand public opinion and concerns regarding kelp cultivation.
3. Argument and statement crafting: Based on

research, regulatory analysis, and community feedback, help students refine their argument and finalize their written or oral statement to the government official. This statement should clearly articulate their position on kelp regulations and outline potential advocacy strategies.

### MEETING WITH A GOVERNMENT OFFICIAL (60 MINUTES):

1. Introductions and welcome: Introduce the government official and provide a brief overview of the lesson's objectives.
2. Official presentation: Invite the official to share their perspectives on kelp cultivation, including their stance on its potential benefits and challenges.
3. Q&A session: Facilitate a question-and-answer session where students can ask their prepared questions and delve deeper into specific aspects of regulations and policy considerations.
4. Student statement: Provide an opportunity for students to present their finalized statement or argument to the official, advocating for their desired policy changes or support for the industry.

### REFLECTION AND ACTION PLANNING (60 MINUTES):

1. Independent reflection: Allow time for students to reflect on their learning and consider the following questions:



*Local oyster farmers harvesting sugar kelp grown for research*

- What surprised you most about the government official's perspective?
  - What are the key challenges facing the kelp industry from a regulatory standpoint?
  - What are some effective strategies for advocating for policy changes or support?
2. Action planning: Encourage students to develop concrete action plans based on their reflections. This could include:
- Drafting letters or emails to local government officials expressing their support for kelp.
  - Organizing community events or awareness campaigns about the benefits of kelp.
  - Engaging with other stakeholders like environmental groups or businesses to build a stronger coalition for kelp advocacy.
3. Sharing and collaboration: Upload completed work to LPF and share insights with other educators to build a network of support and collaboration.

#### **HOMEWORK/END OF CLASS:**


- Finalize and upload your reflection to LPF.
- Consider researching specific advocacy strategies and engaging in further action steps based on your plan.

#### **ASSESSMENT:**

- Participation in class discussions and activities
- Quality of argument and statement presented to the government official
- Depth of understanding of regulatory challenges and community sentiment
- Creativity and critical thinking in proposing effective advocacy strategies
- Completion and reflection on action plan

#### **EXTENSION ACTIVITIES:**

- Conduct further research on regulatory models for kelp farming in other regions.
- Advocate for policy changes by contacting local government officials and writing letters to the editor.
- Create educational materials about kelp and its benefits to inform the community.
- Develop a campaign to promote the use of kelp products and support local kelp growers.
- Organize a meeting with other stakeholders to discuss the future of kelp farming in your region.



# LESSON VIII

# KELP ADVOCACY: TAKING ACTION!

**Target Audience: Educators**

**Estimated Duration: 1 day**

**Goal:**

This culminating lesson empowers students to become active advocates for the kelp industry in NYS. They will refine their arguments, prepare presentations, and consider how to continue their support beyond these lessons

**Location: Classroom**

**Community Connection:**

This lesson focuses on community engagement, but specific connections will depend on students' chosen advocacy target (e.g., local member of the industry, government official, public meeting).

**Advance Preparation: None**

**Plan:**

**REFLECTION AND ARGUMENT REFINEMENT (90 MINUTES):**

1. Review and reflection: Begin by revisiting key learnings from the program, emphasizing the potential benefits of kelp for New York State.
2. Argument refinement: Facilitate a discussion to refine individual arguments in favor of kelp cultivation and its support. Encourage students to consider:
  - Key points and evidence supporting their position.
  - Potential counterarguments and how to address them effectively.
  - Tailoring their arguments to the chosen target audience.
3. Mock arguments: Divide students into pairs and assign opposing viewpoints on kelp cultivation. This simulation allows them to practice presenting their arguments and refine their responses to challenges.

### **ADVOCACY PREPARATION (90 MINUTES):**

1. Presentation development: Guide students in preparing their presentations for their chosen target audience. This may involve:
  - Outlining key points and arguments.
  - Creating visuals or infographics to enhance their presentation.
  - Practicing delivery and timing.
2. Social media post/blog creation: Encourage students to create a social media post or blog entry summarizing their advocacy message and engaging their community. Canva or similar tools can be used for design and creation. Final creation can be posted by LPF.
3. Action plan development: Help students develop an action plan for continued support of the kelp industry beyond the lessons. This may involve:
  - Identifying relevant organizations or initiatives to connect with.
  - Planning future advocacy activities or campaigns.
  - Exploring opportunities for further learning or research.

### **ACTION AND SHARING (60 MINUTES):**

1. Presentations: Provide students with the opportunity to deliver their presentations to their chosen target audience. This could be a mock

presentation in class, a virtual meeting with a local representative, or attending a public meeting.

2. Reflection and discussion: Allow time for students to reflect on their advocacy experience and discuss key takeaways. Encourage them to share what they learned and the challenges they faced during their presentations.
3. Social media and blog upload: Encourage students to publish their social media posts or blog entries on appropriate platforms. This allows them to reach a wider audience and raise awareness about kelp.
4. Uploading to LPF: Share completed work with Lazy Point Farms and other educators through the designated platform to connect, share insights, and foster continued collaboration.

### **HOMEWORK/END OF CLASS:**

- Follow through on your action plan and engage in chosen advocacy activities.
- Reflect on your learning and experiences throughout the program.
- Consider ways to apply your knowledge and skills to future endeavors.

### **ASSESSMENT:**

- Quality and effectiveness of presentation or argument delivery.

- Creativity and clarity of social media post or blog entry.
- Depth of reflection and commitment to continued action.

**EXTENSION ACTIVITIES:**

- Organize a community event or workshop about the benefits of kelp.
- Develop educational materials about kelp cultivation and its applications.
- Contact local businesses and encourage them to use kelp-based products.
- Research and propose solutions to specific challenges facing the kelp industry.
- Continue collaborating with Lazy Point Farms and other stakeholders to advance the kelp industry in NYS.

**NOTE:** This improved lesson provides a more structured plan with specific activities and prompts to facilitate deeper learning and engagement. It also emphasizes the importance of community engagement and action beyond the classroom setting.



*Sugar kelp grown by Mike Martinsen, a Montauk oyster farmer and East Hampton Town trustee*



# WEBSITE RESOURCES FOR KELP CURRICULUM

## **KELP INFORMATION:**

- National Oceanic and Atmospheric Administration (NOAA) Fisheries:  
<https://www.fisheries.noaa.gov/species/sugar-kelp>
- New York Sea Grant:  
<https://seagrant.sunysb.edu/Images/Uploads/PDFs/2023-Extension/2023NYSG-Ciaramella-Kelp.pdf>
- Monterey Bay Seaweeds:  
<https://www.montereybayseaweeds.com/the-seaweed-source/tag/sugar+kelp>
- Kelp Forest Ecosystems: <https://sanctuaries.noaa.gov/visit/ecosystems/>
- Drawdown: <https://drawdown.org/solutions/seaweed-farming>
- Long Island Sound Study: <https://longislandsoundstudy.net/2021/02/sugar-kelp/>
- Cornell Cooperative Extension (CCE Marine):  
<https://ccesuffolk.org/marine/habitat/kelp-aquaculture-feasibility-study>
- World Resources Institute:  
<https://www.wri.org/insights/young-forests-capture-carbon-quicker-previously-thought>

## **KELP END USES:**

- Kelp Extract Oil: <https://www.amazon.com/kelp-powder/s?k=kelp+powder>
- Kelp Beauty Products:  
[https://www.lush.com/us/en\\_us/p/bb-seaweed-fresh-face-mask](https://www.lush.com/us/en_us/p/bb-seaweed-fresh-face-mask)
- <https://www.nauticalfarms.com>
- Kelp Fabrics:  
Kelsun <https://www.keellabs.com/kelsun>
- Kelp Soil Amendment:  
<https://www.gardeningknowhow.com/garden-how-to/soil-fertilizers/fertilizing-with-seaweed.htm>
- Kelp Plastics: <https://healthcare.evonik.com/en/medical-devices/biodegradable-materials>

## **KELP RESEARCH AND EDUCATION:**

- Lazy Point Farms: <https://www.lazypointfarms.org/>
- Knowles Teacher Initiative: <https://www.lessonplanet.com/lesson-plans/kelp>
- Keel Labs: <https://www.keellabs.com/>
- Algiknit: <https://www.microfiberinnovation.org/innovation/algiknit>
- Macro Oceans: <https://www.macro-oceans.com/>
- RETI Center: <https://www.reticenter.org/>
- Monterey Bay Aquarium: <https://www.montereybayaquarium.org/>
- Greenwave: <https://www.greenwave.org/>

## **KELP ADVOCACY AND REGULATIONS:**

- Kelp Farming Regulations:  
<https://www.fisheries.noaa.gov/topic/aquaculture/regulation-&-policy>
- NYSDEC Division of Marine Resources:  
<https://seaweedhub.extension.uconn.edu/wp-content/uploads/sites/3646/2023/08/NY-seaweed-application.pdf>
- Seaweed Industry Association: <https://www.facebook.com/indigenousscann/>
- Kelp Alliance: <https://kelpforestalliance.com/>

## **COMMERCIAL KELP:**

- Marketplace, Innovation: <http://marketplaceinnovation.net/>
- EcoEnclose: <https://www.ecoenclose.com/shop/>
- Sugar Kelp Cooperative: <https://www.instagram.com/sugarkelpcooperative/>
- Atlantic Sea Farms: <https://atlanticseafarms.com/>

**NOTE:** This list is not exhaustive and students should be encouraged to conduct further research on specific topics of interest.