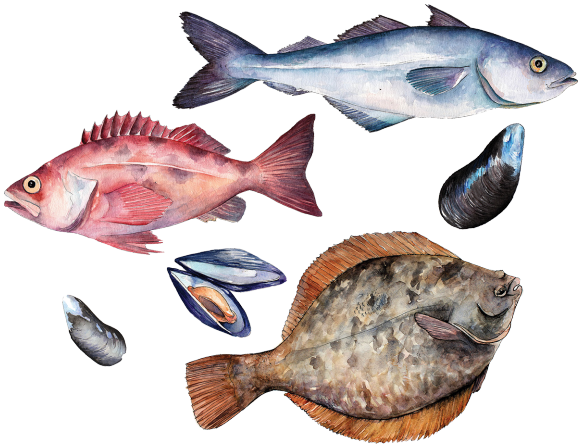
MASSACHUSETTS FARM TO SCHOOL

HARVEST of the MONTH in the CLASSROOM



SEAFOOD

HISTORY

It is difficult to write up a comprehensive history of seafood because fish has been a part of the human diet since Paleolithic times. Archaeologists have excavated ancient sites full of shells and fish bones, indicating our ancestors ate fish. Cave paintings depicting seafood have also been discovered. The Nile river was a crucial source of seafood for the ancient Egyptians, who left tools, paintings, and documentation on papyrus about the importance of fish to their diet and civilization. The ancient Israelites, also left a written record of eating seafood. In fact, for every ancient civilization from Greece, Rome, China, Japan to the indigenous people of the Americas, fishing was a central part of their diets.

FUN FACTS

- The Atlantic Sailfish is the fastest fish - it travels as fast as a car on the highway.
- The Massachusetts State Fish is the Atlantic Cod.
- There are over 25,000 species of fish. 3,000 different species live in the Gulf of Maine (including the MA coastline).
- Fish have been on the Earth for more than 450 million years (even before dinosaurs!).

FISHERMAN BIO

Doug Feeney fishes 15 miles off the coast of Chatham, Massachusetts in a place referred to as “Crab Ledge” aboard his fishing vessel Noah. In his 26 years of fishing, he has seen the decline of our state’s fisheries, and is an advocate for more sustainable fishing practices, including eating locally caught fish. Doug mostly fishes for dogfish and skate, some of which he sells dockside off of his boat and to a wholesaler called Red’s Best. To encourage more people to eat dogfish, he’s developed products such as a Noah Burger and fish sticks, which are available in some school cafeterias. *Photo Credit: Greta Rybus*

HARVEST of the MONTH in the CLASSROOM May

Fertilizers from the Sea

Garden

OBJECTIVES

In this activity students will learn there are two living things in the sea that also help gardeners when growing food in their food garden. Seaweed and fish! They will get to see some of the products in the market and even make their own fertilizer from the sea mix.

ESSENTIAL QUESTIONS

What is fertilizer from the sea?
How is fertilizer from the sea made?
What are the benefits of using fertilizer from the sea?
How do I use fertilizer from the sea?
Where can I buy fertilizer from the sea?
How should I store fertilizer from the sea?

MATERIALS NEEDED

- Fish emission
- Fish meal
- Kelp meal
- Dried Seaweed (not roasted)
- Blender
- One gallon pitcher
- 5 gallon bucket
- Strainer
- Spray bottles

LESSON

Introduction:

Discuss with students that food gardeners use fertilizer in order to provide their plants with the nutrients they need to grow and thrive. Fertilizers can be organic, such as compost or seaweed, or synthetic, such as those made from chemicals. Organic fertilizers are a great choice for food gardeners because they are renewable and release their nutrients over time. Synthetic fertilizers often release their nutrients more quickly but can also have negative impacts on the environment if used improperly or too often. Fertilizer is an important part of any successful food gardening operation, so it's important to familiarize yourself with the type you'll be using before applying it to your garden beds.

Pass the samples of seaweed to students to observe with their senses.

Explain to students that seaweed is a versatile and nutrient-dense staple for food gardeners. In addition to providing essential micronutrients, seaweed also helps to naturally aerate the soil, improve water retention, and increase the number of beneficial microbes in the soil. Seaweed can be added directly to compost piles or collected from the beach and soaked in water to create a liquid fertilizer that can be applied directly to garden beds. It is an excellent source of nitrogen, potassium, calcium, and other trace minerals that are essential for plant growth. Beyond its nutritional benefits, seaweed has also been found to reduce the amount of salts in soils, improve pest resistance and disease tolerance in plants, and even increase yields.

Tell students that fish can also be used as fertilizer in the garden. Pass the fish meal or fish emission around as you explain that fish are an excellent source of fertilizer for food gardens. Fish waste is rich in nitrogen and

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LESSON, cont.

other essential micronutrients, making it a great alternative to chemical fertilizers. It is also easy to incorporate into the soil and can be used as a top dressing or added directly to compost piles. Fish emulsion, made from ground up fish parts, is particularly beneficial for vegetable gardens as it provides plants with quick-release nutrients that help them grow quickly and produce heavy yields. Mixing fish emulsion into the soil can also help to create structure and increase water retention, improving overall plant health. Additionally, fish fertilizer helps to encourage beneficial soil microbes and beneficial insects, further promoting a healthy garden habitat.

Make your own seaweed fertilizer liquid:

- 5 cups dried seaweed
- 3 gallons of water

1. Wash dried seaweed to remove salt
2. Add seaweed and some water to fill blender
3. Blend until seaweed is smaller in size or smoothie like
4. Strain the blended seaweed in a one gallon pitcher. (disposed of the roughage into compost)
5. Cover and let the solution sit at least 5 hours or more
6. After the time has elapsed, set the 5 gallon bucket with 2 gallons of water.
7. Strain the 1 gallon seaweed solution into the bucket.
8. Mix and fill up the spray bottles.
9. Make sure to test the solution on one plant first.
10. If the plants burn or dry up quickly then add more water to dilute the solution farther.
11. Keep the rest of the solution in a bucket for storage for up to 6 months. Warning the solution will smell bad over time but it is still good to use in the garden.

EXTENSIONS & VARIATIONS

To extend this activity, watch the videos in the two articles below and/or monitor the plants that got the seaweed fertilizer vs the ones that didn't.

- https://www.epicgardening.com/fish-fertilizer/
- https://www.epicgardening.com/seaweed-fertilizer/