Sea vegetables are the future of farming

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Seaweed salad has never appealed to me.

I was incredibly skeptical when I first read that kelp is the new kale. How could a slimy saltwater plant replace the curly crowd-pleaser that foodies take home from farmers markets in bagfuls?

I have spent nearly half of the last decade farming. On land, that is. I studied sustainable agriculture because I understand the harm the modern industrial farming system is wreaking on our planet. I believe food should be grown in a regenerative way that gives back more than it takes from the earth.

While I don't think there is one right way to farm, I do believe there is a wrong way to farm.

Large-scale monocultures—unnatural farming systems that cultivate a single crop—rely on high inputs of fertilizers, pesticides, and antibiotics that are polluting our waterways, depleting our soil health, and producing food that lacks nutritional value. Small-scale regenerative farms, on the other hand, are growing a diverse array of crops, building soil, creating habitats for pollinators, sequestering carbon, increasing food access, and cultivating communities.

For a long time, I have considered aquaculture—so-called "farmed fish" at the grocery store—as being part of the same destructive category of industrial agriculture. And I still do. Monocultures of genetically engineered fish have plagued our water system with many of these same problems linked to industrial land-based farms.

There is, however, another way to farm the seas.

Small-scale regenerative ocean farms look very different from their land-based equivalents. Bren Smith, owner of Thimble Island Ocean Farm and founder of Connecticut-based nonprofit GreenWave, has developed a 3D ocean farming system. Put simply, the vertical design is an underwater garden that is anchored in place with a system of vertical and horizontal lines, lantern nets, and cages growing a mix of kelp, mussels, oysters, among other sea vegetables and shellfish.

Farming on land, even when using the most regenerative practices, has inputs. Fertilizers, feed, and fresh water, obviously. Plastics and metal are required for irrigation and weed suppression. Energy is also necessary, often in the form of fossil fuels.

As a farmer, what I find most impressive about the small-scale model of restorative ocean farming is the lack of damaging inputs. With ocean farming, the sea water and the sun seem to do the heavy lifting.

Farming sea greens and shellfish with the aid of mother nature has the potential to make a meaningful impact as a climate solution. Small-scale regenerative ocean farms are providing a nutritious food source, creating jobs, and restoring our coasts. Sea greens are being grown as biofuels, bioplastics, and an additive to cattle feed that help reduce methane emissions from cows.

Impressively, kelp is also being used to capture and store both carbon and nitrogen. Running Tide, a Maine-based startup, has been prototyping a system that sequesters carbon through microforests of macroalgae, such as kelp, that grow so large they eventually sink to the ocean floor. There, the goal is for the carbon in the seaweed to become buried in deep-sea sediment and thus removed from the short-term carbon cycle.

Shellfish are equally awe-inspiring. Oyster reefs enhance coastal resilience by limiting storm surge. Bivalves have the capacity to filter the water around them by removing pollutants as they feed. This can include removing excess nitrogen from the water which is often a result of fertilizer runoff from industrial farming practices. Billion Oyster Project , a New York-based nonprofit, is restoring oyster reefs to reduce flooding, filter water, and prevent shoreline erosion in New York Harbor.

Any growth industry is no stranger to challenges. There are concerns

about the impacts of ocean farming. If the industry grows too fast, will large-scale monocultures of kelp overcrowd marine ecosystems and coastlines? New regulations may be necessary to protect native species and coastal communities.

There may also be a supply and demand issue if sea vegetables and other products are not integrated into our economy at the same rate that land farmers and fisherwomen and men transition to the trade. With careful planning, thought, and the right leadership, these potential problems seem surmountable for a solution that has so much to offer both people and the planet.

GreenWave is leading the charge. With innovative farm designs, an intensive farmer training program, and an online hub supporting small-scale restorative ocean farmers, they are quickly and thoughtfully building a nationwide network of kelp farmers who are implementing climate solutions, strengthening coastlines, and increasing food security.

There are thousands of sea plants and animals that could be incorporated into our food system. In many ways, we are just beginning to scratch the surface. The question remains, is our society ready for nutrient-rich sea vegetables and shellfish to take up more space in our diets?

For the sake of our climate, I think I'll give seaweed salad a chance.

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