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Study: Large-scale seaweed farming for carbon capture ‘may not be feasible’

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By Responsible Seafood Advocate

Study raises concerns about the feasibility of global seaweed farming as carbon capture solution

Seaweed farming has been touted as a potential solution for sequestering carbon and mitigating climate change. However, a new study published in ***Communications Earth & Environment (http://dx.doi.org/10.1038/s43247-023-00833-2)*** suggests that the potential of global seaweed farming as a carbon capture solution may not be feasible given the large ocean areas needed to remove between 2.5 and 13 gigatons of atmospheric carbon per year to meet climate goals.

Seaweed can remove carbon dioxide (CO2) from the atmosphere by converting it to organic biomass via photosynthesis. This biomass can subsequently sink into the deep ocean, removing it from surface waters. However, most global estimates of the efficacy of using seaweed to capture carbon are based on extrapolating observations from a few specific sites to a global scale.

The researchers analyzed predictions from Global Macroalgae Cultivation Modeling System to project potential seaweed productivity and harvestable biomass under different levels of nutrient availability and ocean conditions across the global ocean. They projected various scenarios considering nutrient availability and ocean conditions across the global ocean.

A new study raises concerns about the feasibility of global seaweed farming as a potential large-scale carbon capture solution. Photo by Kindel Media (https://www.pexels.com/photo/yellow-seaweed-in-the-sea-8849634/).

Findings indicate that farming over one million square kilometers (386,102 square miles) of the most productive exclusive economic zones (EEZs) waters, primarily located in the equatorial Pacific, would be necessary to harvest one gigaton of seaweed-captured carbon annually.

Outside of these highly productive equatorial regions, cultivation areas would need to triple to achieve the same carbon removal due to variations in seaweed growth and productivity. Moreover, supplementing nutrients would be essential to maintain seaweed productivity, which could involve techniques such as “depth cycling” or upswelling nutrients from deeper waters.

The authors suggest that to meaningfully assess the carbon removal potential of seaweed cultivation, the global variation in seaweed growth potential "must be understood and future research into the refinement of seaweed farming is needed."

Read the full study here (http://dx.doi.org/10.1038/s43247-023-00833-2).

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