

# LAND-CULTIVATED SEAWEED GETS A BIG BOOST FROM WASTEWATER

Seaweed, an already notoriously nutritious food, can become even more nutrient-dense when grown with wastewater from other parts of the food industry, according to new research.

While some seaweed is grown and harvested in sea-based farms, it can also be land-cultivated, or grown in water tanks, as is the case in the study, published recently [in \*Algal Research\*](#). Researchers from the University of Gothenburg in Sweden and Chalmers University of Technology found that land-cultivated seaweed grown using food production process water (a waste product from other food industries) not only grew faster, but had a higher protein content in the final product—four times as much protein than average seaweed, in fact.

For the experiment, researchers grew the seaweed in food production process water, which is often rich in compounds found in fertilizer like nitrogen and phosphorus. The researchers sourced water from salmon farms, shellfish and herring producers. For a totally vegan option they also tapped oat milk manufacturers. They used the different waters on four seaweed species: the brown species *Saccharina latissima* (sugar kelp), and the green species *Ulva fenestrata*, *Ulva intestinalis* and *Chaetomorpha linum* (sea lettuces). The results, which were recorded after eight days, showed that the seaweed grew more than 60 percent faster when treated with the process water.

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Researchers were initially worried that the different waters would taint the final crop, as seaweed with a hint of herring, shellfish or oat isn't the most enticing flavor combination. But according to a taste test panel, the fears were unfounded and the resulting seaweed had no trace of taste from the process water. They plan to scale up their future seaweed production using herring industry water, which was the option that showed the best results.

Kristoffer Stedt, a doctoral student at the Department of Marine Sciences at the University of Gothenburg, believes land-cultivated seaweed will become a common source of sustainably-produced food protein. "We need to conduct tests in larger volumes as a first step in a controlled environment," he said. "But we believe that this may be an alternative source of protein in future foods. It could also be a completely circular system if we used cultivated seaweed as feed for salmon culture on land and used the process water to fertilize the seaweed cultivation."