

Production and Uses of *Ulva armoricana*: The South African Perspective

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Abstract

Seaweed aquaculture in Africa South is relatively recent and less than two decades, with the highest seaweed diversity in Africa and one of the richest in the world. *Ulva* is currently South Africa's largest aquaculture product by weight. It has developed steadily using IMTA paddle wheel ponds as the preferred method of production. *Ulva* efficiently remove dissolved inorganic nutrients and biofiltration capacities showed high uptake rates which can be applied in developing wastewater treatment for agro-allied industries within the safe limits prescribed by the FAO/WHO. Seaweed industry provides raw materials for other sectors of the economy, used as feedstock for phycocolloid production. Apart from the production of Phloroglucinol, Eckol, Kelpak® and Afrikelp®, which are plant-growth stimulants, *Ulva armoricana* also show prospect as plant stimulant for crop production. *Ulva* spp are exciting prospects in terms of energy efficiency revealed biotransformation to Liquefied Petroleum Gas (LPG) is viable, by utilizing cultivated seaweed as feedstock for CH₄. Protein extraction developed as Abfeed™ and Midae Meal™, other farmers' uses kelp as fresh abalone feeds. Fishmeal has been well supplemented or replaced with *Ulva* based diet as source of protein for the production of Abalone, Catfish, Urchin, and has the potential to be a successful fish feed. pH toxicity test is useful for assessing the health of macroalgae grown under aquaculture conditions with increased CO₂ concentrations could lower water pH (4.71 - 6.67) and reduced chlorophyll and photosynthetic activity that typically can occur in IMTA carbon sequestration. Other benefits from *Ulva* production include: capturing industrially emitted CO₂ to use for enhanced seaweed growth, decreasing ocean acidification, as well as uptake of excess nutrients from industrial and agricultural effluent.

Keywords: Aquaculture, biogas, feed, *Ulva*, seaweed, South Africa