(293)

Preliminary Assessment on Growth Performance of Sea Cucumber (*Holothuria scabra*) Integrated with Seaweed (*Kappaphus alvarezii*) under Pen Culture in Jaffna District

Ratheepan, P.[1*], Vijitha, V.[1], Nirooparaj, B.[2]

[1]Department of Biosystems Technology, Faculty of Technology, University of Jaffna, Jaffna, Sri Lanka
[2]National Aquaculture Development Authority, Northern Province, Pooneryn, Sri Lanka
** prteepan@gmail.com*

Abstract

Aquaculture is one of the essential sectors of global food production, addressing the increasing demand for seafood while alleviating pressure on natural ecosystems. *Holothuria scabra,* a high-value sea cucumber species naturally occurs in the Northern waters of Sri Lanka and is now being cultured in farms. *Kappaphycus alvarezii* is a prevalent and quickly expanding seaweed species. Even though new opportunities in the aquaculture sector led many farmers to adopt sea cucumber farming, the lack of suitable sites remains a potential limitation which requires effective techniques to use the available land resources effectively. Therefore, the current study aimed to assess the growth performance of *H. scabra* integrated with *K. alvarezii* in pen culture. For this purpose, three different lagoon-based sea cucumber farms were selected in the Jaffna district namely Allaipiddy, Mandaitivu and Passaiyoor. To perform the integration of selected species, the selected sea cucumber farms were divided into two portions: one with seaweed monoline culture, and the other segregated for sea cucumber species only. Then 10 samples of sea cucumber both under segregated and integrated farming and seaweed were selected to measure the fresh weight at a one-week interval. In addition, water quality parameters such as salinity, pH, temperature, and total dissolved solid also were measured at a one-week interval. According to the results, comparatively higher weight gain for sea cucumber was observed under integrated farming due to the contribution of decaying seaweed materials. Specifically, the highest average weight gain of 7.5 g over six weeks of study was recorded in the Mandaitivu area with no significant difference among different study areas. Regarding the growth performance of seaweed, the highest weight gain of 523 g was observed in the Passaiyoor area over six weeks, resulting in an additional income of 7.14% which might have resulted due to more nutrients like nitrate and phosphate added by sea cucumber wastes. Furthermore, the spatial water quality parameters remained the same for all three locations. Overall, it can be concluded that integrated farming of sea cucumber with seaweed, by contributing to the substantial weight gain of sea cucumber and additional profit, hold promise as a sustainable approach in meeting the growing demand for these valuable marine organisms while mitigating the problem associated with limited land area. Further, it is recommended to study the organic matter content in selected study areas to validate the results in future studies.

Keywords: *Additional income, Integration, Sustainable approach, Water quality, Weight gain*