The Fish World a Monthly Magazine
July 2024 Vol.1(4), 114-118

Popular Article

Seaweed cultivation in India – New livelihood option for coastal communities

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DOI:10.5281/Fishworld.12732562

Abstract

Seaweed cultivation in India has emerged as a new livelihood option for coastal communities. Seaweeds are marine macroalgae that can be harvested for a variety of purposes, including food, medicine, and biofuel. India has a vast coastline of over 8129 km, making it ideal for seaweed cultivation. The potential benefits of seaweed cultivation are numerous. It can provide an alternative source of income for coastal communities, promote sustainable aquaculture, and help mitigate climate change by sequestering carbon dioxide. Seaweed cultivation also has the potential to create new jobs in processing and marketing of seaweed products. Several initiatives have been undertaken in India to promote seaweed cultivation, including the establishment of seaweed farms and research centers. The Indian government has also launched a program to promote seaweed cultivation in the country, with the aim of generating employment and promoting sustainable coastal development. Despite the potential benefits, seaweed cultivation in India faces several challenges, including lack of awareness and technical expertise, limited infrastructure, and inadequate financing. To overcome these challenges, it is necessary to create awareness about the benefits of seaweed cultivation, provide training and technical support to farmers, and develop infrastructure for processing and marketing of seaweed products. In conclusion, seaweed cultivation has the potential to provide a new livelihood option for coastal communities in India. However, it requires concerted efforts from government, industry, and civil society to promote and support this emerging sector.

Keyword: Seaweed cultivation, Coastal communities, Livelihood options, Economic development, Sustainability

Introduction

The global seaweed production, according to the FAO report of 2021, stands at approximately 35 million tonnes, with India country contributing only around 0.01% to this total. as projected by Polaris Market Research in 2022. The main driving force behind this growth is the increased consumption of seaweeds worldwide, due to their potential health benefits. This heightened consumption necessitates the commercial cultivation of seaweeds to support the global market's supply chain. To facilitate this, both state and central governments in our country have initiated several measures and provided subsidies to farmers to promote seaweed cultivation in

coastal areas. Notably, the government of India has recently allocated over 640 crores under the PM Matsya Sampada Yojana (PMSY) to invigorate the sector.

The growth of seaweed-based enterprises in India has a lot of potential because of a wide range of marine resources (Dhargalkar & Deshmukhe, 1996).)

In the next five years, India wants to expand seaweed production from the present level of 25,000 tonnes to 11,50,000 tonnes (FAO, 2022). India collected 18,400 tonnes of seaweed in the wild in 2019 and 4,137 tonnes of red seaweed. Along the Indian coast, a total of 23,980.4 ha has been identified as prospective seaweed farming areas.

The main source of this discrepancy between potential and actual outcomes might be addressed by commercial macroalgae production and processing (Tandel et al., 2016).

Benefits

Seaweed serves as a rich source of vitamins, minerals, and fiber, offering not only nutritional benefits but also an appealing taste. The medicinal properties of many seaweeds, including their anti-inflammatory and anti-microbial attributes, have been recognized for millennia, contributing to their widespread use in traditional medicine. Certain varieties of seaweed contain potent agents known for their ability to combat cancer, raising hopes among researchers for their potential effectiveness in treating malignant tumors and leukemia. Seaweed has played a pivotal role in fostering economic growth, finding applications across various industries. It serves as an effective binding agent in products like toothpaste and fruit jelly, while also featuring prominently as a softening component in organic cosmetics and skincare items.

As bioindicators, seaweeds play a crucial role in maintaining marine ecosystems' health by absorbing excess nutrients, mitigating nutrient imbalances, and preventing harmful algal blooms caused by agricultural, industrial, and household waste. Seaweeds act as effective iron sequestrators, crucially regulating iron levels in marine environments and safeguarding marine life from potential harm caused by excessive iron concentrations. Additionally, they play a role in trapping and removing heavy metals, thereby aiding in the detoxification of marine ecosystems. Functioning as oxygen and nutrient suppliers, seaweeds derive sustenance through photosynthesis and release oxygen while providing essential organic nutrients to support the diverse marine life within their habitats.

Culture technics

- Short stake and line method: This technique involves erecting short stakes on the seabed arranged in rows. The seeded line utilized in this method does not incorporate floats. It is suitable for very shallow areas during spring low tide.
- Long stake and longline with float method: Long stakes are set up on the seabed with wide

spacing between rows. Seeded lines with floats are employed in this method.

- Suspended rope and line with rope: Ropes suspended by floats and anchored with weights characterize this technique. Seeded lines incorporate floats in this method.
- Bamboo raft method: Bamboo poles serve as floats, while weights act as anchors in this method. Seeded lines may or may not include floats.
- Raft method: Bamboo poles function as floats, with iron stakes serving as anchors. Styrofoam balls maintain seaweeds at the desired level. This method is applicable in water depths of 10-20m, particularly in wide channels and open bodies of water. It is suitable for moderately strong waves and water currents.
- Spider web method: Similar to the raft method but without bamboo, this technique is utilized in open bodies of water with depths of 10-20 meters. It is primarily employed in areas with moderately strong waves and water currents, offering high yield and enhanced flexibility.
- Lantay method: Bamboo frames are utilized in this method, with a net covering the entire structure. Primarily used for nursery and seed-holding purposes, it is not intended for commercial use.

Future Prospects

The future of seaweed cultivation in India holds significant promise, driven by various factors outlined in the preceding information. With the global demand for seaweed products steadily increasing, India stands poised to capitalize on its abundant coastal resources and diverse seaweed species.

Expansion of Production: India aims to substantially expand its seaweed production over the next few years, with ambitious targets set by governmental initiatives like the PM Matsya Sampada Yojana. The goal to increase production from 25,000 tonnes to 1,12,000 tonnes by 2025 signals a strong commitment to fostering growth in this sector.

Utilization of Potential Farming Sites: The identification of numerous potential seaweed farming sites along the Indian coast, as indicated in Table 1.1, provides a roadmap for strategic expansion. With careful planning and investment, these sites could become hubs for sustainable seaweed cultivation, bolstering both local economies and the national agricultural sector.

Diversification of Species Cultivation: India boasts a rich biodiversity of seaweed species, including commercially valuable varieties like Kappaphycus alvarezii and Sargassum. Diversifying cultivation efforts to encompass a broader range of species could enhance resilience against environmental fluctuations and cater to evolving market demands.

Technological Advancements: From traditional stake and line methods to more modern techniques like raft cultivation, there is room for technological innovation in seaweed farming practices. Investing in research and development to improve efficiency, reduce environmental impact, and increase yield will be crucial for sustaining

long-term growth in the industry.

Market Expansion and Export Potential: Establishing strong market connections, both domestically and internationally, will be essential for scaling up seaweed production in India. As global awareness of the nutritional and commercial benefits of seaweed continues to grow, India can position itself as a leading exporter of high-quality seaweed products, tapping into lucrative international markets.

Policy Support and Capacity Building: To realize the full potential of seaweed cultivation, comprehensive policy frameworks are needed to provide incentives, ensure quality standards, and facilitate access to modern cultivation technology. Additionally, investing in training programs and capacity building initiatives for farmers will empower them to adopt best practices and maximize yields.

Overall, the future prospects for seaweed cultivation in India are promising, with ample opportunities for sustainable growth, economic development, and environmental stewardship. By harnessing its coastal resources, embracing technological innovation, and fostering a supportive policy environment, India can emerge as a global leader in the seaweed industry, contributing to food security, economic prosperity, and environmental sustainability.

Conclusion

India's seaweed industry shows promising growth potential, backed by government initiatives like the PM Matsya Sampada Yojana. Extensive seaweed resources along the coast offer opportunities for cultivation, but challenges such as awareness, technology access, and market connections persist. Overcoming these hurdles is crucial for India to harness the economic and environmental benefits of seaweed cultivation and emerge as a significant player in the global market.

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