Nori Culture in Ariake Bay

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Nori culture in Japan began in a primitive form during the Edo Era (late 17th century). In recent year, the annual production has been at around 10 billion sheets and about 100 billion yen. In Ariake Bay, the nori culture started in the 1870's with a primitive method called "soda hibi culture" using branches inserted vertically into the bottom as substrates, and developed into a modern net culture in 1920's which is still prevail in the most area in Japan. The annual yield of nori in this bay was 3.7 billion sheets and 41.2 billion yen in 1999, and both values are about 40 % of total nori productions in Japan. A total annual yield of Ariake Bay was 56 billion yen in 1999 and nori culture is the most dominant industry and account for 75 % of all productions. The 3,100 household are operating in the nori culture and each earns about 13 million yen annually as a average. *Porphyra yezoensis* is widely used for nori culture in Japan and its conchocelis phase is maintained in cultural tanks on land. Nori culture starts in early October and end in March in this bay. The parasitic fungi and bacteria cause sever damage frequently in nori culture. As effective method to alleviate these parasitic diseases, a net-freezing technique has been developed and the nets can be switched to a new frozen net whenever diseases become apparent. An organic acid treatment technique was originally developed to prevent the contaminating growth of the other green thalli such as *Enteromorpha* spp. in 1970's. This technique has been also proved to be effective for maintaining healthy growth of Porphyra and has commonly applied as treatment for protection from the parasitic diseases. The important environmental factors for growth of Porphyra thalli in the culture field are the current speed of the seawater movement and the quantity of the nutrients in the seawater. It is considered that the minimum current for the nori culture is 20-25 cm / sec and the minimum nitrogen level is about 7 μ-atoms / *l* in Ariake Bay. Nori culture play an important role to remove nutrients from the aquatic environments, but it is rather difficult to estimate the precise amount of each nutrient taken up in nori because the quantity of each constituent in Porphyra thalli is considerably different depending on the quality of the final nori products.

The nori culture is not so stable industry because occasionally occurring bloom of the planktonic diatoms and/or the parasitic disease result in sever damage for the nori production. Another problem is a low price of nori product due to the competitions with cheap imported products even though the nori is mostly produced inside the country. Thus the future of the nori culture industry depend on how high quality of the products can be maintained with low production coasts.