

Kamonwan Sunthornket 2013: Development of Mass Culture Technique for Transplantation of *Halodule pinifolia* (Miki) den Hartog. Master of Science (Marine Science), Major Field: Marine Science, Department of Marine Science. Thesis Advisor: Associate Professor Shettapong Meksumpun, Ph.D. 200 pages.

This study aims to develop the optimum culture technique for increasing the amount of seagrasses under laboratory conditions before transplantation. To determine the effect of total organic matter in sediment on *Halodule pinifolia* growth, *H. pinifolia* were planted in sediment containing 3 levels of total organic matter (10, 50 and 90 mg/g DW) for 9 months. The highest values for upper-shoot biomass, shoot density and average leaf length of *H. pinifolia* resulted from 50 mg/g DW total organic matter. For the study on the impact of pore water nutrients on *H. pinifolia* growth, pellet fertilizer (10-25-20; N:P:K) was added to the sediment in which the seagrass was planted, at rates of 0, 1.5 and 3.0 g/kg sediment for 5 months. Best results were obtained in the sediment with 1.5 g fertilizer/kg sediment (contained 454.13 mg NH_4^+ -N, 4.43 mg $\text{NO}_2^- + \text{NO}_3^-$ -N and 765.68 mg PO_4^{3-} -P). Here, the seagrass showed the highest above ground biomass, shoot density and average leaf length, which were increased $127.52 \pm 6.30 \text{ g DW/m}^2$, $5,594 \pm 439 \text{ shoots/m}^2$ and $12.9 \pm 1.4 \text{ cm}$, within 14, 5 and 16 weeks, respectively. The above ground biomass showed a positive relation with ammonium-nitrogen concentrations ($P < 0.01$, correlation coefficient = 0.57) but showed a negative relation with nitrite and nitrate-nitrogen concentrations ($P < 0.01$, correlation coefficient = 0.57).

Student's signature

Thesis Advisor's signature