

Pichai Onchan 2006: Impact of Integrated Seaweed-White Seabass Culture System on Growth of *Gracilaria fisheri* (Xia et Abbott) Abbott, Zhang et Xia. Master of Science (Fisheries Science) Major Field: Fisheries Science, Department of Fishery Biology.
Thesis Advisor: Associate Professor Anong Chirapart, Ph.D. 153 pages.
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Cultivation of the gracilarioid, *Gracilaria fisheri* (Xia et Abbott) Abbott et Xia was conducted in 1 ton cement tanks under an integrated seaweed-white seabass culture system (a semi-enclosed/controlled culture system), from May to December 2004. Plants of the gracilarioid at different densities of 500, 1000 and 1500 g wet wt m⁻² were cultured in ambient seawater (Experiment 1 as control), and in fish effluent from white seabass culture tanks at density of 5 fishes m⁻² (Experiment 2) and density of 10 fishes m⁻² (Experiment 3). In Experiment 1 (control), growth rates of *G. fisheri* obtained low values of $-0.02 \pm 1.77\%d^{-1}$ (500 g wet wt m⁻²), $-0.51 \pm 1.88\%d^{-1}$ (1000 g wet wt m⁻²) and $0.16 \pm 0.92\%d^{-1}$ (1500 g wet wt m⁻²). In Experiment 2 growth rates were higher than the control experiment when cultured at algal density of 500 g wet wt m⁻² ($0.58 \pm 1.42\%d^{-1}$) and 1000 g wet wt m⁻² ($-0.14 \pm 1.49\%d^{-1}$). In contrast, at algal density of 1500 g wet wt m⁻² growth rate was lower than the control ($-0.16 \pm 1.53\%d^{-1}$). Growth rate decreased in Experiment 3 and showed the lowest values of $-0.53 \pm 1.53\%d^{-1}$ (500 g wet wt m⁻²), $-0.32 \pm 1.89\%d^{-1}$ (1000 g wet wt m⁻²) and $-0.69 \pm 1.98\%d^{-1}$ (1500 g wet wt m⁻²). In this study, growth of the gracilarioid had negative correlations ($p = 0.05$) with seawater temperature ($r = -0.229$), turbidity ($r = -0.317$), nitrite-nitrogen ($r = -0.184$) and hardness ($r = -0.271$) while it had positive correlations ($p = 0.05$) with ammonia-nitrogen ($r = 0.219$), nitrate-nitrogen ($r = 0.508$) and alkalinity ($r = 0.296$). In addition, determination of proximate composition in tissue of the cultivars in Experiment 2 and 3 showed higher values than those cultured in Experiment 1. This study indicated that appropriate ratio of algal density to fish density had a negative impact on growth rate of the gracilarioid cultured under the integrated seaweed-white seabass culture system. *G. fisheri* showed the highest growth when cultured at density ratio of 5:500 (fish:seaweed). The cultivars in seabass effluent obtained higher values of protein content than those cultured in ambient seaweed.

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