

Assessment of optimal depth and photon irradiance for cultivation of the green alga, *Codium fragile* (Suringar) Hariot, by artificial seed production in Korea

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Codium fragile (Suringar) Hariot is an edible green alga farmed in Korea using seed stock produced from regeneration of isolated utricles and medullary filaments. Experiments were conducted to reveal the optimal conditions for nursery culture and out-growing of *C. fragile*. Sampling and measurement of underwater irradiance were carried out at farms cultivating *C. fragile* at Wando, on the south-western coast of Korea, from October 2004 to August 2005. Growth of erect thalli and underwater irradiance were measured over a range of depths for three culture stages. During the nursery cultivation stage (Stage I), growth rate was greatest at 0.5 m depth (0.055 ± 0.032 mm/day) where the average mid day irradiance over 60 days was 924 ± 32 $\mu\text{mol m}^{-2} \text{s}^{-1}$. During the pre-main cultivation stage (Stage II), the greatest growth rate occurred at 2 m depth (0.113 ± 0.003 mm/day) with an average irradiance of 248 ± 116 $\mu\text{mol m}^{-2} \text{s}^{-1}$. For the main cultivation stage (Stage III) of the alga, thalli achieved the greatest increase in biomass at 1 m depth (7.2 ± 1.0 kg-fresh wt./m). These results suggest that the optimal growth at each cultivation stages of *C. fragile* could be controlled by depth of cultivation rope.