

Effects of Cover Design and Yellow Dust on Biomass Productivity of Microalgae in Outdoor Cultivation

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In Korea, yellow dust storm comes from China in spring and early summer every year. The effect of yellow dust and cover designs on microalgal cultures were investigated in this study. Culture vessels were constructed to have different cover designs: fully-covered, fully-covered with vents, half-covered, and open. A marine microalga, *Tetraselmis* sp. KCTC12432BP, was cultivated using the culture vessels outdoor during a yellow dust season. In addition, yellow dust was collected separately, and added to flask cultures of the microalgae to investigate its effect on algal growth. As the covered area increased, the biomass productivity decreased. There was no significant effect of yellow dust on algal biomass productivity. The results indicate that providing solar irradiance is more important than blocking introduction of yellow dust to the algal culture. The composition and severity of yellow dust may differ year by year, and thus long-term assessment of the effects of yellow dust on algal culture will be needed to draw a conclusion. Even if yellow dust has growth inhibitory effects, the cost for installation of cover and the gain from improved algal biomass production should be carefully examined to determine if covering is necessary.