

## Potential possibility for microalgae mass cultivation in open pond : by analyzing the light responses of microalgae

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After the microalgae were regarded as a useful resource to extract biodiesel, lots of studies are ongoing to conduct mass cultivation of microalgae in open pond. However, owing to the geometric demerits of the open pond, such as inhomogeneous light intensity and its exposure time to microalgae, it is more difficult to cultivate microalgae than other cultivation systems. In this study, we assumed a mixing inside the pond to overcome the light distribution problems by circulating microalgae from bottom to top. So as to focus on a mixing effect on microalgae growth, we assume the light intensity as a constant. The outcomes of mixing effect are evaluated by comparing the biomass production between without mixing and with mixing by referring the light exposure time from the references. From the references, we find microalgae surface floating time from 8 to 10 minutes which can be used for light exposure time. Because of the photosynthetic nature of microalgae, we adopt Han model which can illustrate the photosynthesis in the microalgae. Also, we take basic droop model to express microalgae growth. By comparing the biomass productions, we expect to evaluate economic feasibility as a further study.