

**ANALYSIS OF THE LIPID CONTENT OF MICRO ALGAE SPECIES  
USED IN PHILIPPINE AQUACULTURE FOR THEIR  
POTENTIAL IN BIODIESEL PRODUCTION**

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### **Abstract**

This study looked into the proximate lipid content of four micro algal species (*Chaetoceros calcitrans*, *Tetraselmis tetrahele*, *Nannochloropsis sp.*, and *Chlorella sp.*) and one macrophyte (*Chaetomorpha sp.*) commonly used in Philippine aquaculture. Prior to the proximate analysis using the method described by Bligh and Dyer (1959), the four micro algal species were cultured for five days in 1 L vessels fertilized with TMRL enrichment media. Proximate gravimetric analysis showed that the average lipid content of *Tetraselmis tetrahele* at 24.11% was significantly higher ( $p < 0.01$ ) when compared to all the algal species tested. Comparing the mean lipid content of all micro algal species against that of the macrophyte also revealed a significantly higher ( $p < 0.01$ ) lipid content at 17.40%. Growth rates for all the micro algal species over the culture period was also measured with the highest growth rate exhibited by *T. tetrahele* at 1.15 divisions per day.

Projected estimates for micro algal production yields of oil from a 1 hectare pond at 0.5 m depth were also calculated from the lipid analysis data showing that the highest yield of oil (7.29 tons) can be attained by culturing *T. tetrahele*. This number was higher than estimated reports for oil production from an area of 1 hectare dedicated to either jatropha (1.7 tons) or coconuts (5.0 tons). This makes the culture of micro algal species a potential option for producing feedstock for biodiesel production.