

## **Quantitative assessment of seagrass as Bioethanol Feedstock**

### **Abstract**

The depletion of fossil fuels and the increase of fuel demand lead to the search of more sustainable alternatives. Nowadays, bioethanol is gaining popularity as renewable fuel to replace existing fossil gasoline. Currently, bioethanol is produced from land based crops but in the future, marine biomass such as seagrass and seaweeds are promising alternatives since these do not take up land area for cultivation. In this paper, seagrass, *Thalassia hemprichii* was tested for its potential as bioethanol feedstock via fermentation by yeast, *Saccharomyces cerevisiae*. *Thalassia hemprichii* is highly abundant as it can be easily cultivated in warm seawater in Malaysia for example in Sabah. *Thalassia hemprichii* contains high carbohydrate content, hemicellulose and cellulose which will be hydrolyzed to glucose and other reducing sugars, which in turn is converted to ethanol by yeast. It has been shown that the extracted leaves from *Thalassia* sp. through hot water treatment gives higher concentration of sugar (1.68g/ml) as compared to acid hydrolysis using dilute sulfuric acid (1.38g/ml). Besides that, among the five different inoculum concentrations, it was found that 10% (v/v) concentration of inoculum gives the highest bioethanol production for both types of treatments. Ethanol produced with hot water treatment (2.29g/ml) was higher as compared to sulfuric acid hydrolysis(1.74g/ml). The results from this study showed that *Thalassia hemprichii* has potential to be used as substrate for bioethanol production.