

(176)**Effect of Potassium Nitrate on Biomass and Lipid Yield of *Nannochloropsis* sp. for Biofuel Production****Weerasooriya R.R., Rupasinghe C.P.***

Department of Agricultural Engineering, Faculty of Agriculture, University of Ruhuna, Sri Lanka
**chinha@ageng.ruh.ac.*

Abstract

Energy crisis is an unavoidable problem in current world. Fossil based energy pose a serious conflict on energy demand due to its rapid depletion as well as Green House Gas emissions to the atmosphere with its combustion. Biodiesel as a renewable energy is a where microalgae are studied as an oil source. *Nannochloropsis* sp. has been identified to contain a higher oil yield and more suited for outdoor cultivations. Many aspects that effect on growth and oil productivity of *Nannochloropsis* sp. such as light, pH, temperature, and salinity have been studied previously. Potassium nitrate has been identified to be increasing the oil content in *Nannochloropsis* sp. Previous studies revealed that there is a significant relationship with potassium nitrate and oil yield of *Nannochloropsis* sp. Therefore, effect of potassium nitrate levels on the productivity of biomass content and lipid content of *Nannochloropsis* sp was studied in the present study to understand optimum levels. Micro algal cell growth rate was examined by Spectrophotometer using 665 nm wave length. Different potassium nitrate concentrations from 0.0035-0.0075 mol/L were used with Guillard and Ryther's F growth media. The highest oil yield of 3.5% was observed in 0.0055 mol/L potassium nitrate concentration but there is no significant difference among the treatments. The highest biomass yield was observed as 1.7 g/L in potassium nitrate concentration 0.0045 mol/L. Higher cell growth was achieved at KNO₃ concentration of 0.0055 g/L. Guillard and Ryther's F growth media can be improved by adding potassium nitrate to achieve higher biomass and lipid productivity.

Keywords: *Nannochloropsis* sp., Oil yield, Biomass, Pottasium nitrate