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PII: S0960-8524(14)00875-X
DOI: http://dx.doi.org/10.1016/j.biortech.2014.06.031
Reference: BITE 13565

To appear in: *Bioresource Technology*

Received Date: 31 March 2014
Revised Date: 6 June 2014
Accepted Date: 8 June 2014

Please cite this article as: Zhao, Z., Shi, H., Liu, Y., Zhao, H., Su, H., Wang, M., Zhao, Y., The influence of duckweed species diversity on biomass productivity and nutrient removal efficiency in swine wastewater, *Bioresource Technology* (2014), doi: http://dx.doi.org/10.1016/j.biortech.2014.06.031

# The influence of duckweed species diversity on biomass productivity and nutrient removal efficiency in swine wastewater

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## Abstract

The effect of temperature, light intensity, nitrogen and phosphorus concentrations on the biomass and starch content of duckweed (*Landoltia punctata* OT, *L. minor* OT) in monoculture and mixture were assessed. Low light intensity promoted more starch accumulation in mixture than in monoculture. The duckweed in mixture had higher biomass and nutrient removal efficiency than those in monoculture in swine wastewater. Moreover, the ability of *L. punctata* C3, *L. minor* C2, *Spirodela polyrhiza* C1 and their mixtures to recovery nutrients and their biomass were analyzed. Results showed that *L. minor* C2 had the highest N and P content, while *L. punctata* C3 had the highest starch content, and the mixture of *L. punctata* C3 and *L. minor* C2 had the greatest nutrient removal rate and the highest biomass. Compared with *L. punctata* C3 and *L. minor* C2 in monoculture, their biomass in the mixture increased by 17.0 and 39.8%, respectively.

**Key words:** Duckweed; Mixture; Swine wastewater; Biomass; Starch

## 1. Introduction

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