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## Biomass production and NPK retention in macrophytes from wetlands of the Tingitan Peninsula

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### Abstract

A field study was undertaken on *Phragmites australis* (Cav.) Trin. Ex Steudel, *Typha angustifolia* L., *Sparganium erectum* L., *Juncus acutus* L., *J. maritimus* Lam., *Scirpus litoralis* Schrader, *S. maritimus* L., *Lemna gibba* L. and *L. minor* L. communities, in order to evaluate and compare their biomass production and NPK retention rates in unpolluted and polluted wetlands of northwest Morocco. This was undertaken to select species with the potential for macrophyte-based wastewater treatment systems. The highest total biomass values were observed for *T. angustifolia*, *P. australis* and *S. erectum*, which accumulated 56.5, 52.7 and 20.1 t dry weight ha<sup>-1</sup> year<sup>-1</sup>, respectively. They also retained in their tissues nitrogen and phosphorus at the rates of 922, 561 and 375 kg N ha<sup>-1</sup>; and 114, 72.1 and 84.8 kg P ha<sup>-1</sup>, respectively. The above-ground annual net productivity estimated under Mediterranean climate exceeds that reported for *Phragmites australis* occurring under an oceanic climate. But it is similar if compared to the continental climate for *Sparganium erectum* and *Typha angustifolia*. As for NPK accumulation, *Phragmites australis* and *Typha angustifolia* did not differ in their natural sites, or according to *P. australis* applied in constructed wetlands for wastewater treatment. © 1998 Elsevier Science B.V. All rights reserved

**Keywords:** Macrophyte community; Biomass production; NPK retention; Morocco; Net productivity

### 1. Introduction

Macrophytes are commonly used in constructed wetlands for sewage treatment (Blake and Dubois, 1982; Brix and Schierup, 1989). This is due to their many interesting properties (e.g. Brix and Schierup, 1989). Submerged macrophytes are suitable for

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