

Silica in invasive wetland plant species of lagoons, Côte d'Ivoire: Spatio-temporal patterns

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Abstract

Tropical wetlands are known to accumulate a large quantity of Biogenic Silica (BSi) produced by wetland plant species (Struyf et al., 2015), and approximately 70-80% of the total supply of Dissolved Si (DSi) to the coastal zone occurs in (sub) tropical river systems (Jennerjahn et al. 2006). However, the data at these latitudes are limited. Here, we present the BSi concentration from eleven invasive macrophyte species randomly collected in three small (~800ha) lagoons of Côte d'Ivoire during 12 months. Our data showed a large spatio-temporal variability of BSi in the three lagoons with no consistent trends. In general, the BSi concentrations obtained were high and values ranged from 0 to 54 mg g⁻¹ through the entire sampling period, with the highest values found in *Acroceras zizanioides* (emergent species of Poaceae). In general, free floating species had significantly less BSi than emergent species ($P < 0.0001$) which corroborates with the earlier findings of Schoelynck and Struyf (2016). However, the concentrations of BSi found in *Salvinia molesta* (a free floating species of fern, Salviniaceae) at the young stage were similar to those found in the emergent species. Based on yearly averages, highest BSi values were observed in Kodjoboué lagoon, and the lowest in the Ono lagoon that is 80% covered by macrophytes. Moreover, the dissolved silica (DSi) concentrations were systematically higher in Ono Lagoon than in Kodjoboué Lagoon. We conclude that in an eutrophic system Si accumulating in aquatic macrophytes is not related to Si availability but to other environmental factors.

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