
First study on the occurrence of the invasive Water hyacinth (*Eichhornia crassipes*) in Al Kabir Al Janoubi River, Lebanon.

Youssef Ghousein*^{†1,2,3,4}, Jacques Haury⁵, Hervé Nicolas⁴, Ghaleb Faour³, Ali Fadel³, Luis Portillo⁵, and Hussein Abou Hamdan²

¹Agrocampus Ouest, UMR Ecologie et Santé des Ecosystèmes (UMR ESE) – Ministère de l'Agriculture, de l'Agroalimentaire et de la Forêt – 65 rue de Saint Briec, CS 84215, F35042 RENNES Cedex, France

²Université Libanaise Faculté des Sciences – Lebanon

³CNRS Liban - Centre de Télédétection – Lebanon

⁴Agrocampus Ouest UMR Sol Agronomie Spatialisation (UMR SAS) – Agrocampus ouest INRA – France

⁵Agrocampus Ouest, UMR Ecologie et Santé des Ecosystèmes (UMR ESE) – Agrocampus ouest INRA – France

Abstract

Eichhornia crassipes is a hydrophyte considered as the most dangerous invasive plant throughout the world as cited by the European and Mediterranean Plant Protection Organization, "EPPO". It causes ecological and economic problems affecting fishing, navigation and biodiversity. Since 2006, *Eichhornia crassipes* was detected in Al Kabir Al Janoubi River, which constitutes the natural Northern border between Lebanon and Syria.

As a first study on water hyacinth in Lebanon, we focused on the characterization of its monthly growth (size, mass and morphology) on two different sites. We have also analyzed its growth variation as a function of abiotic factors (TDS, conductivity, salinity, pH and temperature), and experimented its tolerance to gradients of salinity in and ex-situ studies. Moreover, the ecological relationships of water hyacinth with aquatic and amphibious plant communities was studied.

This study showed a rapid monthly growth of the Water hyacinth with increasing size and biomass of plants between June and November, as well as morphological changes of petioles and laminae. Delayed growth and proliferation of Water hyacinth was detected between the two sites, mainly due to salinity, which was confirmed experimentally in the laboratory: Water hyacinth is sensitive to salt concentration more than 5 per thousand. In addition, Water hyacinth coexisted in the river with other aquatic and amphibious plants such as *Myriophyllum spicatum* and *Ludwigia stolonifera* (native macrophytes), *Paspalum distichum* and *Alternanthera sessilis* (invasive macrophytes).

These biological and ecological results, together with future detailed and continuous analysis of the distribution and cover changes of *Eichhornia crassipes* can help in the understanding of its dynamics and therefore its management.

*Speaker

[†]Corresponding author: youssra.ghoussein@agrocampus-ouest.fr