

PHYTOTOXIC EFFECT OF INDIGOSBUSH (*AMORPHA FRUTICOSA* L.) ON PERIPHYTON DEVELOPMENT

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INTRODUCTION

Indigobush (*Amorpha fruticosa* L.) is a deciduous shrub with a high tolerance to various habitat conditions promoting its aggressive invasive behavior outside of its native range (Fig 1). Allelochemicals in leaves of this invasive plant have strong phytotoxic effects and inhibit seed germination and growth of various autochthonous plants. In natural environments, during the decomposition of its dead mass (e.g. leaves), allelochemicals could be released into the aquatic systems. The aim of this study was to investigate the influence of the indigobush aqueous extracts on physical and chemical parameters as well as on periphyton development in the experimental aquatic systems.

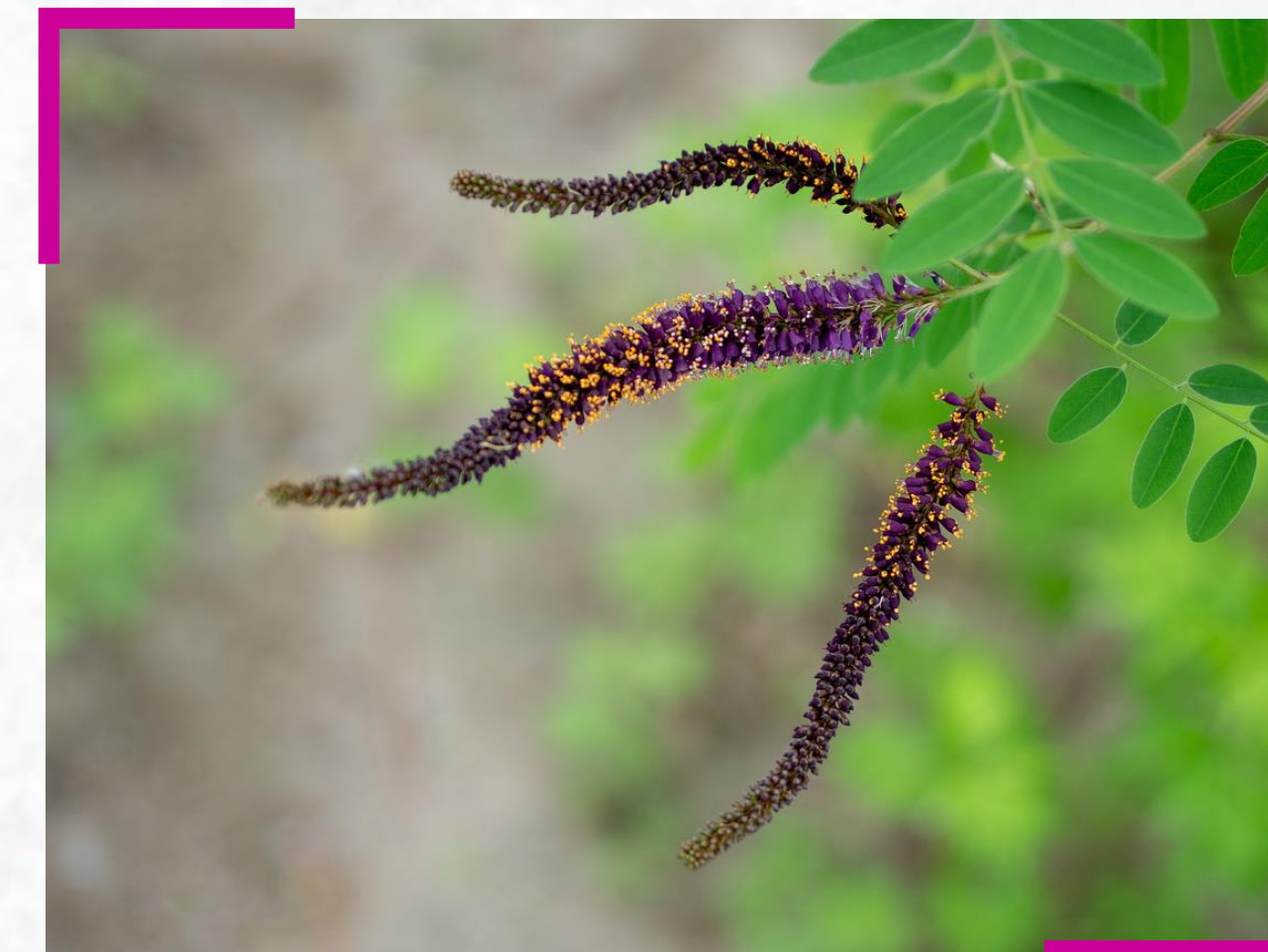


Figure 1 Invasive plant species indigobush (*Amorpha fruticosa* L.)

MATERIALS AND METHODS



Figure 2 Periphyton development on glass slides immersed in the water of Lake Sakadaš (Kopački Rit Nature Park, Croatia)

Glass slides, fastened to a wood frame and oriented vertically, were placed into the Lake Sakadaš at depth of 0.20 m beneath the water surface (Fig 2). The lake is located in the western part of the natural floodplain area of the Danube River. It has an average depth of 5 m and surface water area of 0.15 km². Lake Sakadaš is in eutrophic condition with high phytoplankton biomass and cyanobacteria blooms (1). The microphytes (algae and cyanobacteria) colonization on glass slides immersed in the lake water lasted one month allowing development of very complex periphyton communities. Glass slides covered by periphyton were transported to the laboratory and placed into the experimental tanks filled with a lake water. The tanks were then contaminated using indigobush aqueous leaf extracts (Fig 3). One tank were used for each concentration of aqueous extracts while one served as untreated control. The slides were randomly sampled after the first, and then after the third and sixth day of exposure. Periphyton was scraped using razor blade and split into the two parts. One part was used for determination of chlorophyll concentration (2, 3), and second for periphyton biomass analysis (4). Water samples for chemical analysis as well as periphyton samples were taken simultaneously.

RESULTS

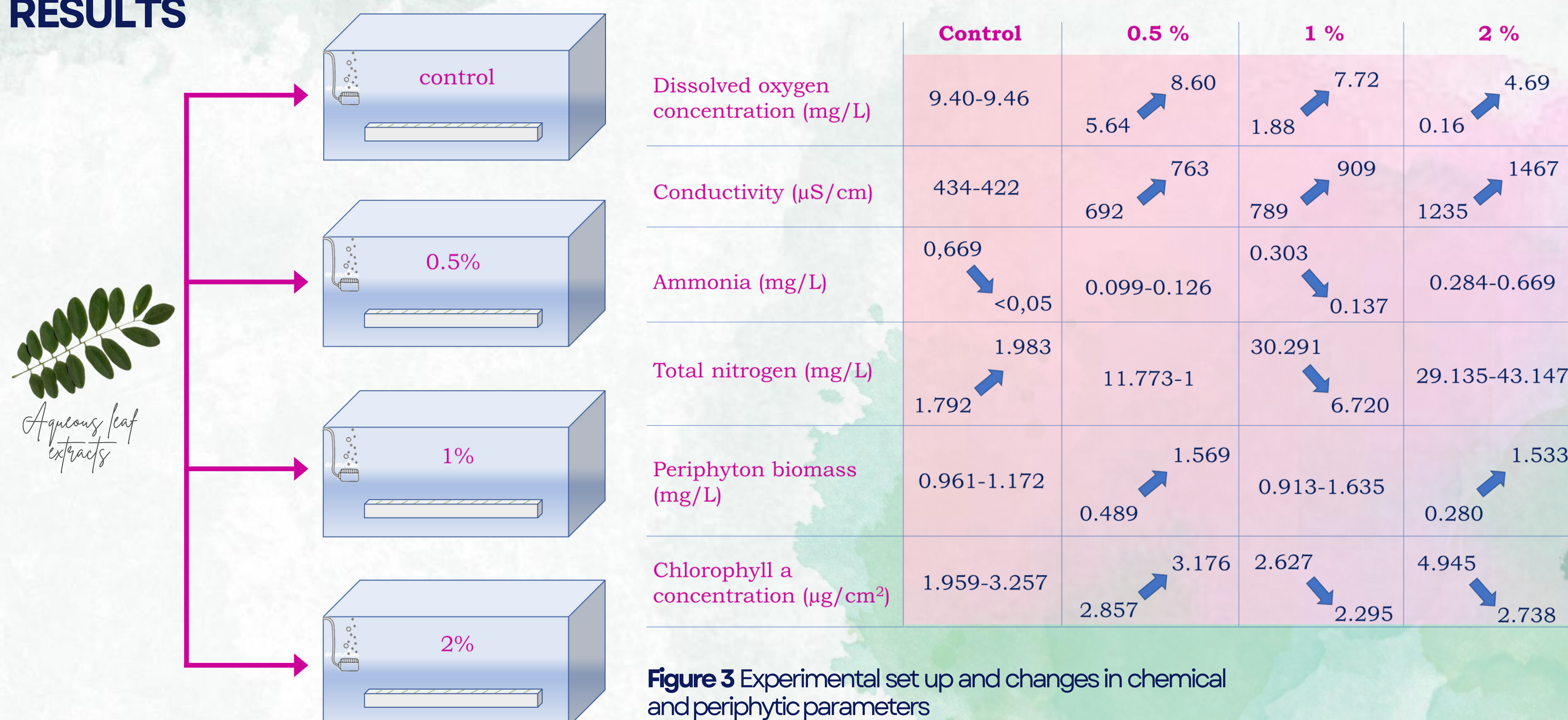


Figure 3 Experimental set up and changes in chemical and periphytic parameters

CONCLUSION

The decrease in chlorophyll a concentration indicated that aqueous leaf extracts disturb microphytes development on glass slides. The most taxa in microphyte communities belonged to the Bacillariophyceae class from the Chrysophyta along with the Chlorophyta group. The results suggest that the rapid invasion of indigobush along the riversides may affect aquatic environments and their biotic communities.