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Biochemical responses of invasive plants, [i]Ludwigia grandiflora and [i]Ludwigia peploides[/i], to water and salt stresses

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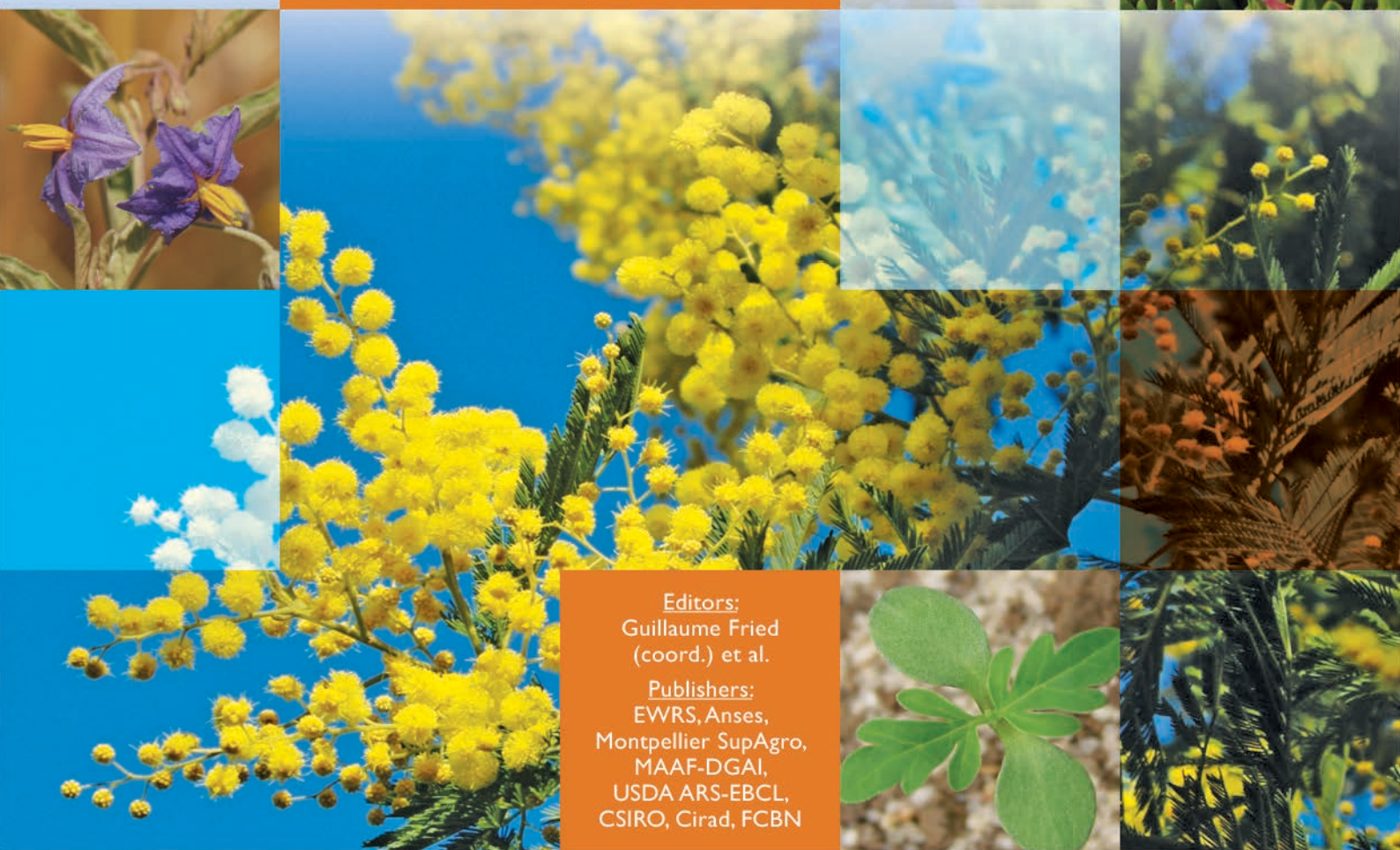

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Biochemical responses of invasive plants, *Ludwigia grandiflora* and *Ludwigia peploides*, to water and salt stresses

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Biological invasions are the third cause of biodiversity decline. The Water Primroses *Ludwigia grandiflora* (Michx.) Greuter & Burdet and *Ludwigia peploides* (Kunth) P.H.Raven are two invasive aquatic species in France. They have important impacts, both economical and ecological. The strategies currently used to fight their invasion revealed serious difficulties to have an effective management.

In order to determine if these species have a better plasticity than the native species *Mentha aquatica* L., water stress and salt stress were applied to the three species for five days. Biochemical analyses have been realized to evaluate global strategies of response to stresses and the mobilization of antioxidant pathways.

Results showed differences in the responses depending on stress and species. Salt and water stresses impacted photosynthetic activity and proteins concentration, suggesting that an oxidative stress occurred. To deal with salt stress, guaiacol peroxidase was mobilized by *L. grandiflora* and *L. peploides*, while *M. aquatica* used glutathione reductase to scavenge reactive oxygen species. According to the biological variables studied, the two invasive species seem more plastic than the native one. Differential responses in favour of *L. grandiflora* were noted compared to *L. peploides*. Their different ploidy level, higher for *L. grandiflora*, can explain difference.

Other antioxidant enzymes or some reactive oxygen species could be dosed to bring complementary results.

Keywords: Invasive water primrose; Plasticity; Abiotic stress; ROS; Antioxidant enzyme