
Synthesis on Biology, Ecology and Management of terrestrial forms of invasive Water Primroses on meadows

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Abstract

Invasive Water Primroses (*Ludwigia grandiflora* subsp. *hexapetala* and *L. peploides* subsp. *montevidensis*) are amphibious plants native in subtropical Southern American areas. They become a weed problem in wet meadows along rivers and in marshes, because they are highly competitive over native plants. These forms appear on winter-submersed meadows mainly due to cuttings that settle when water level decreases. They affect pasture productivity, biodiversity and marsh landscapes as well as their use for cattle breeders. Effects on farmers' exploitations are very bad: loose of EU grants, reduction of grazing area and impossibility to use the colonized pastures, leading to land abandonment and marsh agriculture decrease.

We have performed detailed studies in Western France both at the site level and over France. Recently we achieved a 4 years Research program focused on these terrestrial forms.

They can be as productive in terrestrial habitats than in aquatic ones, around 2 kg dry weight per m², up to 5 kg dry weight per m² at a maximum. Both species can grow together but *L. peploides* is more hydrophilic and *L. grandiflora* is more competitive and resistant to emersion, eliminating progressively *L. peploides*.

Aquatic plants are dense, longer with poorly branched stems with few roots, while terrestrial ones in wet meadows are shorter, with a bushy form and more roots anchored into the substratum. At the beginning of colonization, populations do not form fruits, at least for *L. grandiflora*, but after some years, fruits are observed. *Ex situ* germination studies point out seed fertility. Seedlings begin to appear in some sites.

Two steps of weed management were distinguished. To avoid colonization, use of naturally brackish water and landscape management practices have been successfully tested. To restore pastures many mechanical of hand pulling methods have been applied leading to recommendations to reduce colonization.

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