

Evaluating suitable environmental conditions for seed germination of invasive *Mimosa pigra*; case of Mahaweli River Basin

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Mimosa pigra is listed as one of the 100 “World’s Worst” invasive species and it has been accidentally introduced to Sri Lanka. At present, it has been naturalised in certain parts of the country and causes a massive threat to particular ecosystems. *Mimosa pigra* is spreading along the upper catchment areas of Mahaweli River forming dense thickets belt along 30 to 35 km along the Mahaweli River basin where the water is used specially for irrigation activities. *Mimosa pigra* seeds are dispersed with the sand for construction which extracted from the Mahaweli River and its tributaries. Also, the seed dispersal with the flow of water is high especially in the rainy season. Therefore, it has become a major threat in Victoria catchment area in Kundasale with the Mahaweli development water project.

In Sri Lanka it was found that seeds remained 100% viable at the room temperature (28°C). There is no proper literature which says about its reproductive capacity. Still no proper attempt have been made to address this issue by responsible parties.

Pre analysis of *Mimosa pigra* was carried out at the in front of the Central Environmental Authority. The case study was carried out at a selected study site at Kundasale (GN division –Pandiwatta) where *Mimosa pigra* is dominant. A preliminary survey was done in Kundasale site in order to get an idea about the study site. Three areas have been identified; clay soil area, sandy clay soil area and sandy soil area, to lay out plots in the study site. Three 20*20m plots were laid one at each site and stocking density of the study site was estimated. Seed Germination Index was calculated from prepared composite soil sample of five random locations of each plot and separately for sandy, silt and clay soil samples. Physical and Chemical properties of soil in three different sites were analyzed.

Mimosa pigra has shown certain attributes as weeds and it is able to tolerate all type of soils and Sandy loam soil is the most preferred soil type under the low amount of organic matter. Study revealed that the Neutral soil pH and normal environmental temperature (27-28°C) is most suitable for the growth of the *M.pigra*. Seed Germination Index of *Mimosa pigra* was found to be 80% in a shady condition and 100% with full sunlight.

Keywords: *Mimosa pigra*, Seed Germination Index (SGI), invasive species, soil types