
Fast Invading Exotic Tree Paper Mulberry (*Broussonetia papyrifera*) in the Periurban Ecosystems: Does Allelopathy Play a Role?

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Abstract

Paper mulberry (Moraceae; Botanical name *Broussonetia papyrifera*) is an exotic tree which is spreading very fast in various ecosystems especially the periurban areas surrounded by forest patches. It forms dense monospecific stands of shrubby nature and does not allow any other plant to grow underneath or in association. In order to find out the possible mechanism for the absence of other species in association with the tree, role of allelopathy was investigated. For this, the understory soil and leaf litter of paper mulberry were collected and their allelopathic effect was determined on the commonly occurring understory species– *Bidens pilosa*. The aqueous extracts of paper mulberry leaf litter severely reduced seed germination and growth of *B. pilosa*. The emergence and growth of test species were also reduced in the understory soil and soil amended with the litter powder (0-40 g kg⁻¹ soil) of paper mulberry, though no nutrient deficiency was detected in the soil. Even the incorporation of exogenous activated charcoal or nitrogen could not completely ameliorate the toxic effect of the litter. Further, the soils were found to contain allelochemicals which were identified as phenolic compounds using HPLC. The study concludes that the leaf litter of paper mulberry exhibits allelopathic effect on *B. pilosa* through water soluble phenolic allelochemicals that may have ecological implications.

Keywords: Invasion, Litter, Paper Mulberry, Understorey

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