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### Comparative Seed Biology of Invasive vs. Native Plant Species in Lowland Rainforest in Sri Lanka, Towards Effective Forest Management

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#### Abstract

Invasive species are the second largest threat to biodiversity loss in the world. *Clidemia hirta* is a common invasive species found in disturbed sites such as along forest foot paths in tropical lowland-wet evergreen forests of Sri Lanka. Comparative information on seed biology of invasive species with that of the native species in the same habitat is crucial for the management of invasive species. Thus, we studied the seed biology of *Clidemia hirta* with that of three native species, *Schizostigma hirsutum*, *Melastoma malabathricum* and *Plecranthus kanneliyensis* that share the same habitat of *C. hirta*. Mature, ripen fruits of all the species were collected from at least ten individuals in Sinharaja rainforest and transported to the University of Peradeniya and experiments were initiated within 2-3 days of seed collection. Seed Moisture Content (SMC) was determined through the oven dry method. Seed germination was studied at 25 or 32° C in light/dark (12hrs/12hrs), dark and green light regimes. SMC of all the studied species were <15% indicating that they were orthodox in seed storage behaviour. Thus, they all have the ability to produce a soil seed bank easily. *S. hirsutum*, *P. kanneliyensis* and *C. hirta* seeds germinated to 100, 77.5 and 95.5% in light/dark conditions, while only 53.3% of the *M. malabathricum* seed germinated within 30 days, their T<sub>50</sub> values were 26, 24, 32 and 36 days, respectively indicating that seeds of all the studied species are nondormant. However, none of the seeds germinated in complete darkness and under green light, except for *S. hirtusum* which show only 10 and 30% germination under above conditions, respectively, revealing that seeds of all the study species required full or partial light conditions for their germination. Thus, seeds that burry in the ground could also easily form a soil seed bank. Further, the germination traits of all the study species seemed to be adapted to their habitat conditions. Light requirement for germination may allow them to select open disturbed habitats with suitable light conditions. Our study revealed that seed germination behavior of the invasive species *C. hirta* is similar to the native species that share the same habitat. Thus, introduction of native species adapted to same habitat soon after the mechanical eradication of *C. hirta* could be suggested for management of *C. hirta* invasion along the footpaths in the tropical lowland wet evergreen forests.

**Keywords:** Invasive species, Native species, Moisture content