

SEED TRAIT DRIVEN INVASIVENESS OF *Dillenia suffruticosa*: PERSPECTIVES ON REPRODUCTIVE BIOLOGY AND ECOLOGICAL IMPACT

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Dillenia suffruticosa (Dilleniaceae) aggressively invades low-lying areas of Sri Lanka's wet zone. While several studies have assessed the ecological impacts of *D. suffruticosa*, limited research has explored the causes of its invasiveness. Seed traits and reproductive biology remain under-investigated despite their likely contribution to invasiveness. This study aimed to examine the effects of selected seed structural and functional characteristics in relation to the invasiveness of the species. Mature seeds and fruits were collected from the Pitawala Conservation Forest Reserve. Aril retention, buoyancy, moisture level, germination speed, seed coat proportion, and seed shape index were assessed using standard procedures. Seeds from fifteen individuals were analysed to determine seed shape index, seed coat proportion, and moisture content. Buoyancy was assessed using five replicates of 25 seeds per individual, while germination was evaluated using three replicates of 25 seeds per individual. Comparatively fast germination and relatively low T50 Value (26 days) indicated rapid and successful germination. Seed shape index (0.049 ± 0.013) suggested a compact, spheroid form, supporting efficient dispersal and soil penetration. A moderate embryo-to-seed ratio (0.398 ± 0.050) indicated adequately developed embryos that may contribute to the invasive potential through efficient post-dispersal establishment. Seed coat ratio (0.31 ± 0.14) reflected moderate protection with adequate permeability, potentially aiding fast germination responsiveness. Buoyancy tests showed that a substantial proportion of seeds remained afloat for extended periods (100% up to 14 days), highlighting the potential for hydrochorous dispersal in riparian or flood-prone habitats. Seeds exhibited a high moisture content of $28.79 \pm 2.56\%$, suggesting physiological readiness for rapid germination, a trait associated with opportunistic establishment in disturbed environments. The fleshy, colorful aril likely attracts frugivores, aiding its spread across habitats. This combination of traits may enhance the invasive potential of the species. The findings demonstrate that seed structural and functional traits play a central role in the invasiveness of *D. suffruticosa*. Future research should focus on integrating findings into management practices to mitigate their spread in vulnerable ecosystems.

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