Morphological and Molecular Identification of Weeds in Export-Ready Coir Samples

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The coir industry is an export-oriented high-income agro-based business. Sri Lanka is the world's largest coir and brown fiber supplier. Coir products contaminated with weeds have been identified as the main challenge in coir exportation. The National Plant Quarantine Service (NPQS) of Sri Lanka is the governing agency that regulates the movement of weeds into and out of the country. Yet, the current tests used in the NPQS are not sufficient to identify certain weed species. Therefore, this project aimed to develop a strategy to identify weed contaminants in export-ready coir using DNA barcoding and morphological characters. Coir samples were subjected to grow-out tests (as recommended by the NPQS) at the NPQS planthouse from September to November 2022. Standard plastic trays were filled with coir and moisture content was maintained at 85% for 21 days. Then, seedlings (20) that emerged from coir materials were transplanted in clay pots and a seedling guide was prepared using distinctive morphological characters. Only seven morphologically distinctive seedlings were identified. Thus, it is recommended to extend the data collection up to the flowering stage to confirm the species status of each seedling. DNA was extracted from the 20 seedlings for DNA barcoding targeting 3 regions; *rbcL*, *matK* and *trnL-F*. DNA sequencing was done for *rbcL* for one species and a similarity search was conducted in NCBI BLAST. The species was identified as *Cyperus richardii* with a 99.83% identity. Since this species has not been previously recorded in Sri Lanka, further studies are suggested to confirm the results. The outcome of the study is highly useful to identify frequent weed contaminants of coir, to propose strategies to minimize the contamination and issuing phytosanitary certificates.

Keywords: Coir, DNA barcoding, Molecular identification, *rbcL,* Weeds

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