Exploring Cost-effective and Non-hazardous Options for Dormancy Breaking and Germination Induction of Selected Weed Seed Species Present in Coir Pith Blocks, Manufactured by the Exporters in the Coconut Triangle, Sri Lanka, for Phytosanitory Certification Purposes at NPQS

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Weed seed contaminations are unavoidable in coir pith-based products (CP) manufactured by the exporters in the coconut triangle of Sri Lanka. Inefficiency and low success rate of the regular 'Grow Out' test used for detecting the viable weed seeds present in export-ready CP is the key challenge in timely-issuance of phytosanitory certificate by the National Plant Quarantine Service (NPQS) of Sri Lanka. This study was conducted to test cost-effective, non-hazardous, and efficient alternatives to the H_2SO_4 pre-treatment (the most successful for the target species so far) for breaking dormancy and inducing germination of few troublesome weed seed species present in CP, namely *Urena lobata* (UL), *Cenchrus echinatus* (CE); *Cassia occidentalis* (CO), and to re-test the most effective alternative on *Chrysopogon aciculatus* (CA) and *Stachytarpheta indica* (SI). Scarified and non-scarified seeds (n=30*2) of each species were treated with H_2SO_4 (control), acetic acid, KNO_3, vinegar, coconut water, and distilled water (blank control) for 10, 30, 45, and 60 minutes, followed by 24-hour soaking in water. Treated seeds were germinated on wet filter papers and/or coir substrate in Petri dishes at laboratory conditions for 14 days. Germinated and non-germinated seed count was recorded, followed by a Tetrazolium test to check the viability of non-germinated seeds. Final germination percentage (GP), mean germination time (MGT), germination index (GI), and non-germinated viable seeds percentage (via) were calculated. Results showed that the most effective treatment combination for viable CE and CO seeds was using "vinegar for 30 min pre-treatment + 24-hour water-soaking + scarification" (GP and GI >60%, MGT = 1-3 days; $p< 0.05$). This treatment combination also resulted in GP and GI of >45% for weeds CA and SI with the lowest MGT in coir substrate ({<0.05). However, vinegar pre-treatment was not effective for test parameters of UL ($P>0.05$) and warrants further research.

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