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Effect of neem-priming on seed germination and seedlings vigour of four traditional rice varieties of Sri Lanka

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Most of the Sri Lankan traditional rice varieties have low seed germinability. Seed quality can enhance using seed-priming. Traditional rice varieties; Kaluheenati, Kuruluthuda, Maawee and Madathawalu were used. Distilled water and three (100, 50 and 25%) concentrations of commercially available neem seed extract was used for priming for 24, 48, and 72 hours. Primed seeds were dried at ambient laboratory conditions for 24-hours. Then, seeds were pre-soaked in water for 0, 24, 48, and 72 hours. Germination and vigour of primed and unprimed (control) seeds were tested using paper-towel method and seedling emergence, using four replicates of 100 seeds. Arcsine transformed data were analyzed with one-way ANOVA. Microbial growth from unprimed and neem-primed (NP) seeds on agar plates was determined. Germination percentages of unprimed Kaluheenati, Kuruluthuda, Maawee and Madathawalu seeds (*i.e.* 62, 32, 24, and 20, respectively), were increased after 50% NP for 24+ 24 hours pre-soaking(83%), 25% NP for 72+ 24 hours pre-soaking(64%), 25% NP for 48+ 48 hours pre-soaking(49%) and 100% NP for 72+ 48 hours pre-soaking(55%), respectively. Similarly, seedling emergence of the unprimed seeds of the same four varieties (65, 10, 12 and 40%, respectively) was increased with the same treatments by 83%, 25%, 30% and 53%, respectively. *Aspergillus* spp., *Rhizopus* spp. and several gram-negative and positive, catalase-positive bacteria cocci were isolated from seeds of study the four varieties studied. NP has enhanced the seed quality of the four rice varieties studied. Observed reduction of microbial contamination of seeds after NP could be the reason for observed improvement of seed quality.

Keywords: Antibacterial activity, antifungal activity, germination, neem priming and vigour

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