

Identifying Seed Germination Requirements of Selected Lesser-known Fruit Species in Sri Lanka

T. Wijesinghe¹, C. Alahakoon² and A. Perera^{1*}

¹Department of Botany, University of Peradeniya, Sri Lanka

²Hawkesbury Institute for the Environment, Western Sydney University, Australia

*anomap@sci.pdn.ac.lk

Although recognized as excellent sources of nutrients and dietary supplements, some fruit species introduced to Sri Lanka are still not widely cultivated. Poor seed germination may limit their cultivation, but understanding their germination requirements could help promote wider use among local communities. We examined the seed viability, germination under three light regimes (24-hour darkness, 24-hour light, and 12-hour light/12-hour dark), and two dormancy breaking treatments [500 ppm gibberellic acid (GA₃) and manual scarification] on fresh seeds and seeds stored under room temperature in an unsealed polythene bag for one month in three lesser-known, introduced fruit species: *Carissa bispinosa*, *Psidium friedrichsthalianum*, and *Sandoricum koetjape*. A total of 100 seeds [20 seeds per replicate (n=5)] from each species were used for all experiments with a Completely Randomized design. Results revealed that fresh seeds of all species exhibited a viability above 80 %, but after one month of storage, the viability of *P. friedrichsthalianum* seeds reduced significantly ($p < 0.001$). Both fresh and stored seeds of this species did not germinate under 24-hour dark condition; however, germinated well under 24-hour light condition ($p < 0.001$). Fresh and stored seeds of *C. bispinosa* germinated well across all tested light regimes while those of *S. koetjape* germinated well under 24-hour light, and 12-hour light/12-hour dark conditions. However, the time taken for germination of *C. bispinosa* was significantly reduced under continuous darkness (24-hour dark condition) ($p < 0.001$) while *S. koetjape* showed a reduced germination time and higher germination percentage under a 12-hour light/12-hour dark cycle. Application of GA₃ significantly decreased the germination time (in 4 days) for both fresh and stored seeds of *P. friedrichsthalianum* ($p < 0.001$), without affecting the final germination percentage. In contrast, manual scarification had no significant effect on the germination of any of the species tested. These findings suggest that the light conditions of typical of tropical regions are conducive to the germination of these exotic species. However, to popularize these lesser-known fruit species, other factors such as social, nutritional, and sensory aspects should be further studied.

Keywords: *Carissa bispinosa*, Introduced fruit species, *Psidium friedrichsthalianum*, *Sandoricum koetjape*, Seed germination