

Moringa leaf extract priming improves germination vigour and plant performance of bambara groundnut (*Vigna subterranea*)

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The objective of this study was to evaluate the effect of seed priming with moringa leaf extract (MLE) on bambara groundnut landrace seeds characterised into Cream, Light brown and Brown seed coats. Priming with distilled water (control) was compared with priming with MLE solutions of 3% (M3), 10% (M10) and 15% (M15) (w/v). Germination vigour index (GVI), mean germination time (MGT), final germination percentage (FGP), seedling vigour index (SVI), emergence, plant height, leaf number, leaf area index (LAI), chlorophyll content index (CCI), canopy diameter, chlorophyll fluorescence, photosynthetic performance index (Pi). Correlations between germination vigour, seedling vigour and plant performance qualities were also assessed using Pearson's correlation co-efficient. Seed priming treatments, seed coat colour and their interaction thereof significantly influenced all the measured parameters, except for the influence of priming on CCI and the interactive effect of seed coat colour and priming on emergence. Brown seeds produced superior germination and seedling vigour performance with the exception of CCI and LAI. Priming with M3 significantly improved GVI, MGT, FGP, SVI, plant height, leaf number, LAI, CCI and canopy diameter. Seedling emergence was improved by M10, while M15 improved chlorophyll fluorescence and photosynthetic performance index (Pi). Therefore, priming bambara groundnut seeds with M3 was the best priming treatment. FGP, chlorophyll fluorescence, photosynthetic performance index showed strongest correlations with other measured parameters. These vigour and quality indicators may be used as reliable predictive factors of other seed and plant performance indices in seed and plant improvement programmes as selection standards. Priming seeds, particularly brown seeds with M3 resulted in consistent improvement across all germination vigour, seedling vigour and plant performance indices. Therefore, Bambara groundnut seed users can use seed priming M3 while favouring brown seeds as the best selection in order to enhance the germination vigour, seedling vigour and plant performance.