

# Genetic integrity of *Amaranthus* sp. during seed ageing

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## Abstract

Ageing induce genetic deterioration in stored seeds, which has implication for genetic resources conservation in gene banks, thus a controlled deterioration study was conducted on seeds of 3 accessions of *Amaranthus* species conserved at the NACGRAB gene bank, Nigeria. Artificial ageing was conducted on the seeds at 45°C and 50% RH for 72 hours. Seeds were sampled 7 times at different intervals for seed germination and genetic changes using total seed protein as genetic markers with PAGE electrophoresis. Seed viability and vigour were optimal at between 6 and 24 hours of artificial ageing. Activity of seed protein markers appeared in a range of peptides varying from 6.5 to 97 KDa for the freshly harvested control samples. Fainting, thinning out and disappearance of protein band profile occurred with artificial seed ageing of the 3 accessions at the region of 6.5 to 36 KDa, corresponding to the vicilins protein fraction. For 2 accessions (NG/ AO/OS/123 and NG/ AO109/024) however, intensity of profile staining was optimal at 24 hours ageing maintained profile intensity for the 72 hours. These periods correspond to between 30 and 60% germination and vigour index (VI) of 2.3, suggesting that *Amaranthus* seeds begin to loose genetic integrity when germination capacity is below 40%.

**Keywords:** *Amaranthus* sp., Seed storage, Gene bank, Genetic integrity, Electrophoresis