Primming and storage of amaranth seeds: effects of plant growth regulators on germination performance at low temperature
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Seeds of Amaranthus cruentus L. and Amaranthus caudatus L. were primed in the presence of methyl jasmonate (MeJA) or 1-aminocyclopropane-1-carboxylic acid (ACC) or spermine for seven days at 20°C in 3% KNO₃ solution. Germination of primed seeds at low temperature was evaluated before and after seed storage at room temperature. Results revealed that all priming treatments significantly improved final germination percentage (FGP) and germination rate of both Amaranthus species at 15°C when compared to untreated seeds. The highest FGP was obtained from the seeds primed in the presence of 3 μM ACC (86%) and 1 μM MeJA (15%) for A. cruentus and A. caudatus, respectively. Four months storage of primed A. cruentus seeds revealed that the beneficial effects were not significantly reversed during storage. However, extending storage time to 8 months resulted in a slight reduction on FGPs in all priming treatments. The results of this study indicated that the inclusion of 3 μM ACC into 3% KNO₃ priming solution was significantly beneficial to rate and percentage germination of A. cruentus seeds at 15°C and that these seeds maintained the effects of priming in the presence of ACC when stored for 4 months at room temperature.