

PA194**Tolerance of *Coffea arabica* L. Seeds to Subzero Temperatures after Fast and Slow Drying.**

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Seeds are classified in three categories, according to the degree of dehydration and the storage temperature tolerated by the plant cells, *Coffea arabica* L. seeds partially tolerate the loss of water (about 10 to 13 % wet basis) and are regarded as sensitive to storage at temperatures below zero and, for that reason, are considered as intermediate seeds. Seed storage at below zero temperatures is an alternative used in gene banks to preserve seed viability for several species cultivated throughout the world for long periods of time. However, this technique is not yet completely effective for species of intermediate behavior, such as coffee, which is still preserved in field plant collections. Thus, the aim of this study was to evaluate the tolerance of *Coffea arabica* L. seeds to subzero temperatures after drying. Seeds were dried in two different manners, fast drying in silica gel and slow drying in saturated salt solutions, until reaching moisture contents of interest: 0.67, 0.43, 0.25, 0.18, 0.11, and 0.05 g H₂O g⁻¹dw (dry basis). After drying, the seeds were stored at three different temperatures: 10, -20, and -86 °C for two periods: 24 hours and 12 months. The following determinations were made: germination, number of cotyledon leaves open at 45 days, and viability of embryos in the tetrazolium test. The seeds dried slowly to 0.18 g H₂O g⁻¹dw and then stored for 12 months at -20°C did not survive. Coffee seeds do not tolerate exposure for 12 months at a temperature of -86°C. Moisture content below 0.11g H₂O.g⁻¹dw and above 0.43 g H₂O.g⁻¹dw cause injuries to the physiological quality of coffee seeds, regardless of the drying method, temperature, and storage period. Embryos of coffee seeds are more tolerant to desiccation and freezing compared to whole seeds, especially when the seeds are dried to 0.25 g H₂O.g⁻¹dw.

References

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