

DETERIORATION KINETICS OF *Coffea* spp. SEEDS DURING STORAGE

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Coffee is extensively cultivated as a cash crop in many countries, including Brazil, which is the main producer of coffee beans in the world. However, most of the coffee germplasm is maintained in field collections because seeds of *Coffea* are intermediate and do not have their longevity increased under the conventional storage protocols recommended for genebanks. Thus, research for conservation of coffee genetic resources, in genebanks, as seeds, became a priority. We investigated the influence of water content and temperature on the aging rates and longevity of seeds of *C. arabica*, *C. canephora*, *C. liberica* and *C. racemosa*. Seed water content (g H₂O/g dm) was adjusted in relative humidity chambers at different temperatures. After reaching the desired water content, seeds were sealed in hermetic laminated aluminum foil bags and the bags were placed at 25, 15, 5, and -20°C. The deterioration rate of coffee seeds under a combination of water contents and temperatures was evaluated by monitoring seed viability during storage for up to one year. Loss of germination was observed under almost all storage conditions as a function of seed water content, storage temperature and intrinsic characteristics of each coffee species, and was progressive with time. Comparing the four species studied seeds of *C. arabica* and *C. racemosa* presented the best performance while seeds of *C. liberica* deteriorated faster than the seeds of the other species under all conditions tested. Maximal longevity was obtained by storing *Coffea* seeds at 5°C. Even at the critical water content and at 5°C, some loss of viability was observed after one-year storage for all species studied. However, the rate of seed aging was different among the species. We related seed aging to water properties in those species, in an attempt to understand the different mechanisms of seed deterioration.

Key words: coffee, intermediate behavior, aging rate, deterioration, longevity