Seed longevity of vegetable seeds from BGHZ-CITA genebank (Zaragoza, Spain) compared to their duplicates from CRF-INIA (Madrid, Spain)

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Spain is one of the richest countries in crop biodiversity in Europe, particularly in vegetable species. Significant efforts have been made in the last decades to collect vegetable landraces to ensure their long-term conservation in *ex situ* collections, thus preventing their irreversible lost. Spanish *ex situ* collections of plant genetic resources for food and agriculture (PGRFA) are organized in a National Network supported by the National Program on Conservation and Utilization of PGRFA. In the group of vegetable species, the BGHZ-CITA in Zaragoza is one of the national active genebanks, although other regional and national institutions maintain important collections. The responsibilities of the Spanish National Centre of Plant Genetic Resources (CRF-INIA) include the conservation of safety duplicates of the seed Spanish collections (base collection) and their documentation in the National Inventory (NI). According to this National Inventory, BGHZ-CITA conserves more than 7,000 accessions belonging to the main vegetable crops. About 75% of these samples are duplicated in the CRF-INIA. The aim of the viability monitoring test is to decide whether regeneration is required.

In the BGHZ-CITA active collection, the seed samples are desiccated with silica gel and stored at -18 ºC. The CRF-INIA base collection is also conserved at -18 °C (-15 °C before 1998) and seed drying is conducted in dehydration chambers (13-15% R.H. and 20 °C), although silica gel was employed on vegetable seeds until the year 2000. In order to monitor the viability of the seeds, both active and base collections perform germination test during storage.

Seed germinability after 20-30 years of storage was studied on 8 vegetable species (onion, cabbage, pepper, melon, watermelon, cucumber, lettuce and tomato), in both genebanks. The accessions analyzed were multiplied in CITA; part of the obtained seeds was stored in this genebank and a duplicate was conserved in CRF some months later. In both collections, seed germination resulted similar and high in most samples, although slightly lower in the CRF materials, with the exception of Cucurbitaceae seeds (long-lived seeds). The longer pre-storage periods of the CRF samples may have played a role in the lower germination of the short/medium-lived seeds.