

Global strategy for conservation and use of tea genetic resources: summary for ITPGRFA stakeholders

Photo: Michael Major

This document is a concise summary of the *Global Strategy for the Conservation and Use of Tea Genetic Resources* (Bramel and Chen 2019). Its aim is to support decision making by the stakeholders of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) by providing evidence-based information on this genepool in an accessible format.

Crops covered by the strategy

Camellia sinensis (L.) O. Kuntze

This is not an Annex 1 crop as of the time of writing.

Global system for the conservation and use of tea genetic resources

Tea genetic resources are conserved by national repositories, public and private tea research institutes, regional and local governments, botanical gardens, universities, farmers' associations, tea plantations, farmers, and protected sites.

Composition and gaps in ex situ collections

Taking into account the information from Chen et al. (2012), FAO (2018) and the survey conducted by Bramel and Chen (2019), it is estimated that nearly 26,000 ac-

sions of tea are conserved globally in *ex situ* collections. The collections held by the survey respondents represent about 57% of the total global estimate.

Of the collections surveyed most accessions were local landraces of *C. sinensis* var. *sinensis* and *C. sinensis* var. *assamica*. Wild species were conserved only by four of the surveyed institutes. Most of the surveyed collections conserved accessions collected or acquired by their own institute, with little duplication due to low germplasm exchange. Gaps in the collections include under-represented wild species and *C. sinensis* var. *pubilimba*.

Table 1. Summary of key metrics for tea genetic resources.

Key metrics	Data source	Value
Estimated global number of accessions <i>ex situ</i>	Survey ¹ (2018)	15,234
Estimated global number of accessions <i>ex situ</i>	Chen et al. (2012); FAO 2018; Survey (2018)	26,000
Number of accessions with DOI	GLIS portal (2025)	3
Number of accessions notified as available in the MLS	GLIS portal (2025)	0

¹113 institutes answered the survey conducted in 2018



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Routine operations, regeneration, and safety duplication

All but one of the surveyed institutes hold tea field collections, mainly at one site. The only exception was one institute that holds 4% of its collection in cryopreservation. Among the surveyed institutes there are established protocols for most of the key operations, but there are gaps for operations such as distribution and safety duplications. The survey respondents reported maintaining between 2 and 25 plants per accession, based on the institutional needs and land availability. Only 50% of the surveyed institutes reported to have an established protocol for replanting. The most frequently cited risks were: abiotic threats such as drought, high temperatures and frost; pest and diseases; inadequate funding; and extreme weather events.

Documentation and information systems

Five of the surveyed collections hold passport data and six hold characterization data. Three had information publicly available. Nearly all the surveyed institutes reported evaluating a small number of accessions for specific traits, and all reported ongoing genotyping of their collection. They reported a total of 3,253 genotyped accessions.

Distribution and obstacles to use

All the surveyed institutes reported distributing tea genetic resources. The material distributed included tissue culture plantlets, rooted plants, cuttings, pollen, and seeds. Leaf samples were also distributed for research and quality assessments. The users of the material included other genebanks, researchers and breeders, the private sector, and farmers.

Eight of the 13 surveyed institutes distributed tea genetic resources only within the country, and seven institutes reported distributing under the terms and conditions of the ITPGRFA. Lack of requests, and lack of exchange partnerships, were mentioned as reasons for the absence of external distributions. The scarcity of publicly available accession information, and the lack of clarity or consistency in the terms and agreements for Access and Benefit Sharing (ABS) are also a major constraint to greater use of the collections.

Crop descriptors

Agreed descriptors for characterization were developed by IPGRI (1997) and then aligned by Chen et al. (2008) to UPOV distinctness, uniformity, and stability (DUS) testing for national tea variety protection or cultivar registration.

Recommendations and priorities

- A global meeting on tea genetic resources should be held to enable further discussion on securing long-term conservation and use as well as greater collaboration among key stakeholders.
- Increase accession level documentation sharing, including internationally agreed standard phenotypic and genotypic characterization and evaluation data.
- Produce internationally agreed standards and guidelines for secure conservation, safety duplication, and germplasm exchange.
- Develop a standard genotyping platform used for global genotyping efforts.
- Enhance use of diversity conserved through greater collaboration and clearer policy for international exchange of accessions.

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