

PLANT GENETIC RESOURCES

GENEBANKS AND CONSERVATION

Plant genetic resources—the wide range of crop varieties and their wild relatives—are critical to safeguard food security, now and in the future.

Plant genebanks have diverse collections that are agriculturally and economically important. These collections conserve PGR that could be lost from their natural habitats or local communities. Collections may be conserved as seeds in cold storage or as plants in the field, greenhouse, or in tissue culture.



High quality genebank collections are critical for the future of global agriculture. Research develops new technologies and helps identify new methods for efficient, cost-effective conservation.

Key disciplines include:

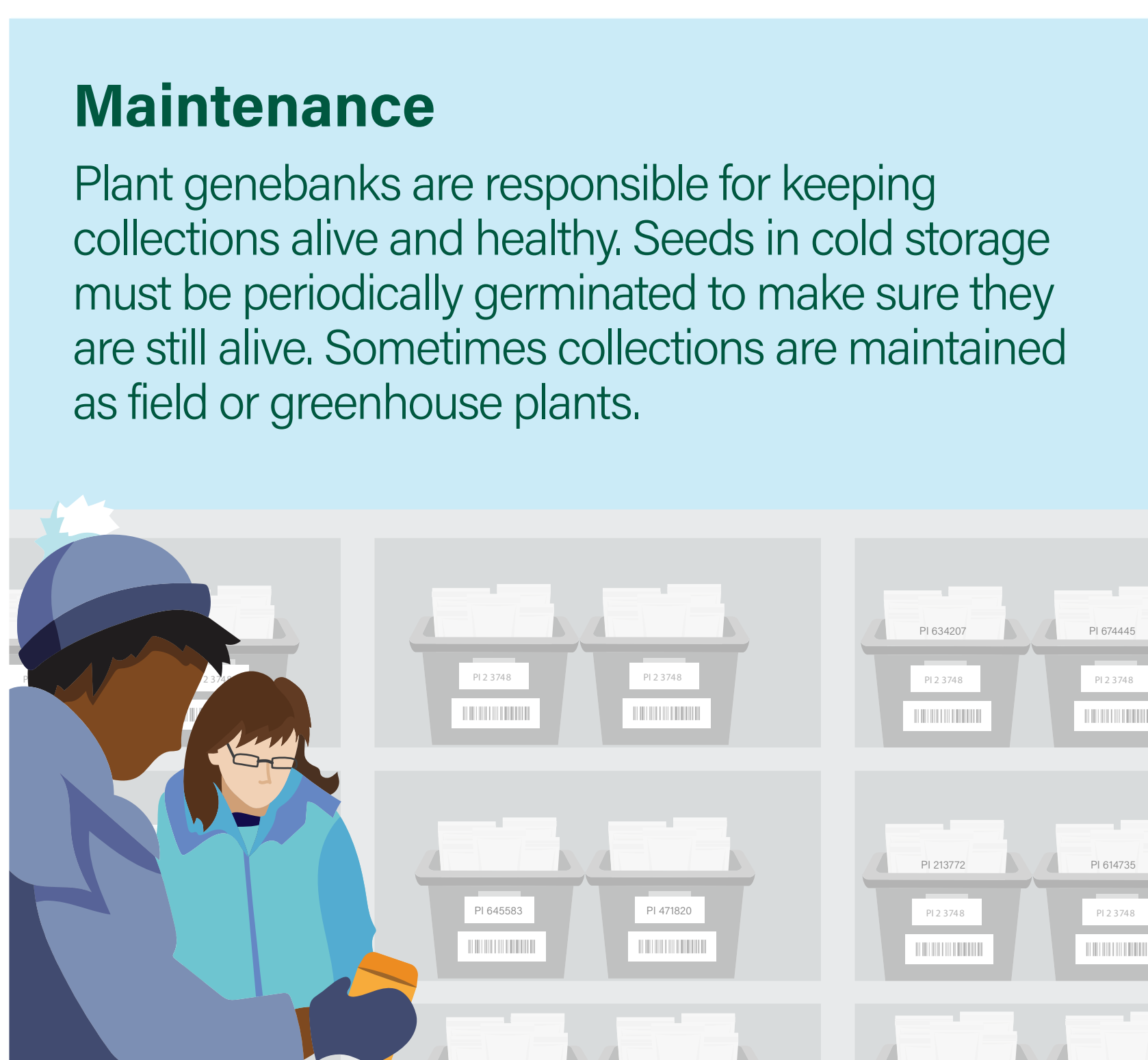
- crop science
- horticulture
- plant pathology
- plant biology and physiology
- taxonomy
- plant genetics and breeding



Acquisition

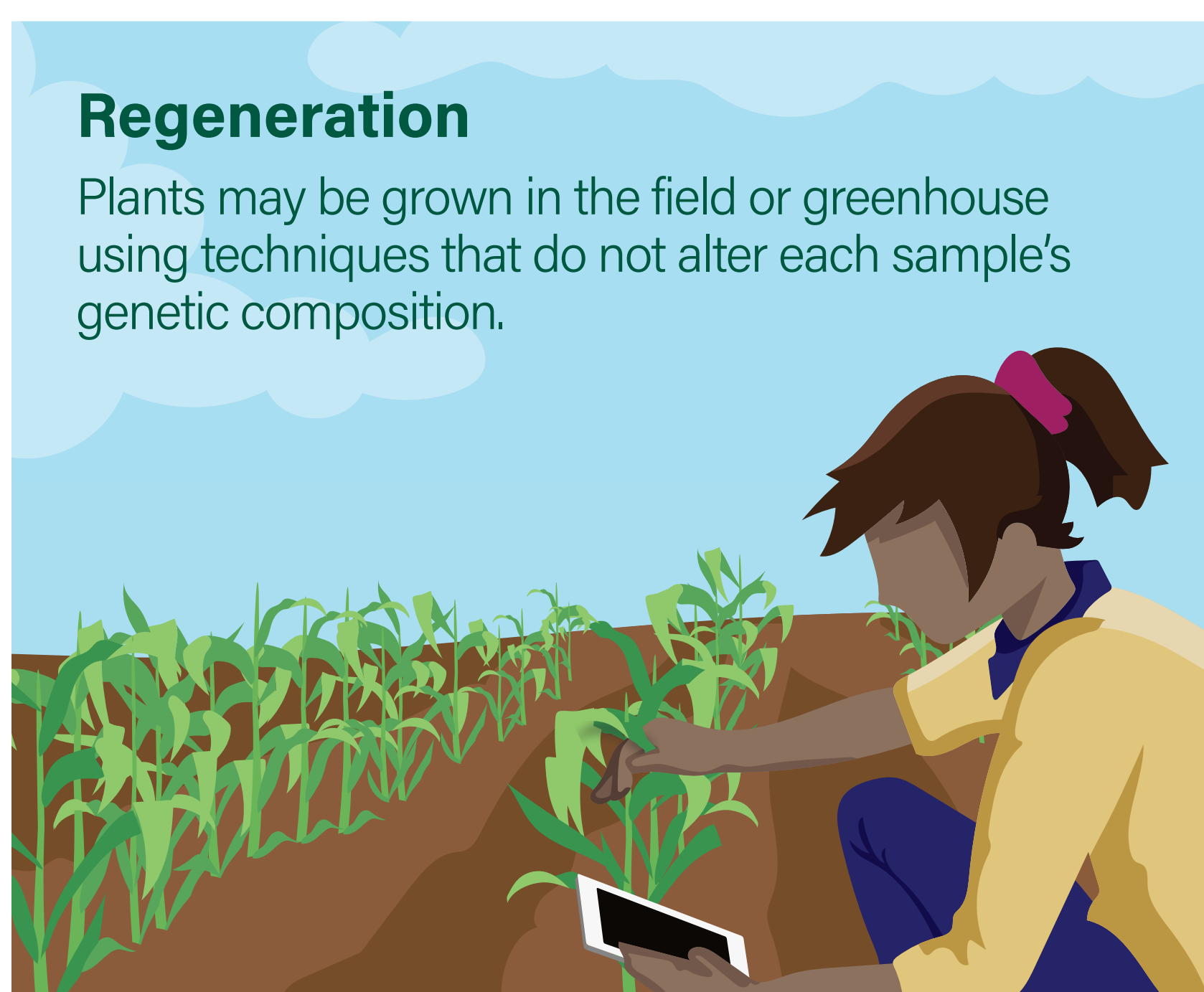
Collections represent a wide range of genetic diversity. New plant materials come from plant explorations and exchanges within a country and internationally.

Foreign imports are inspected or tested to make sure they are free of pests and pathogens.



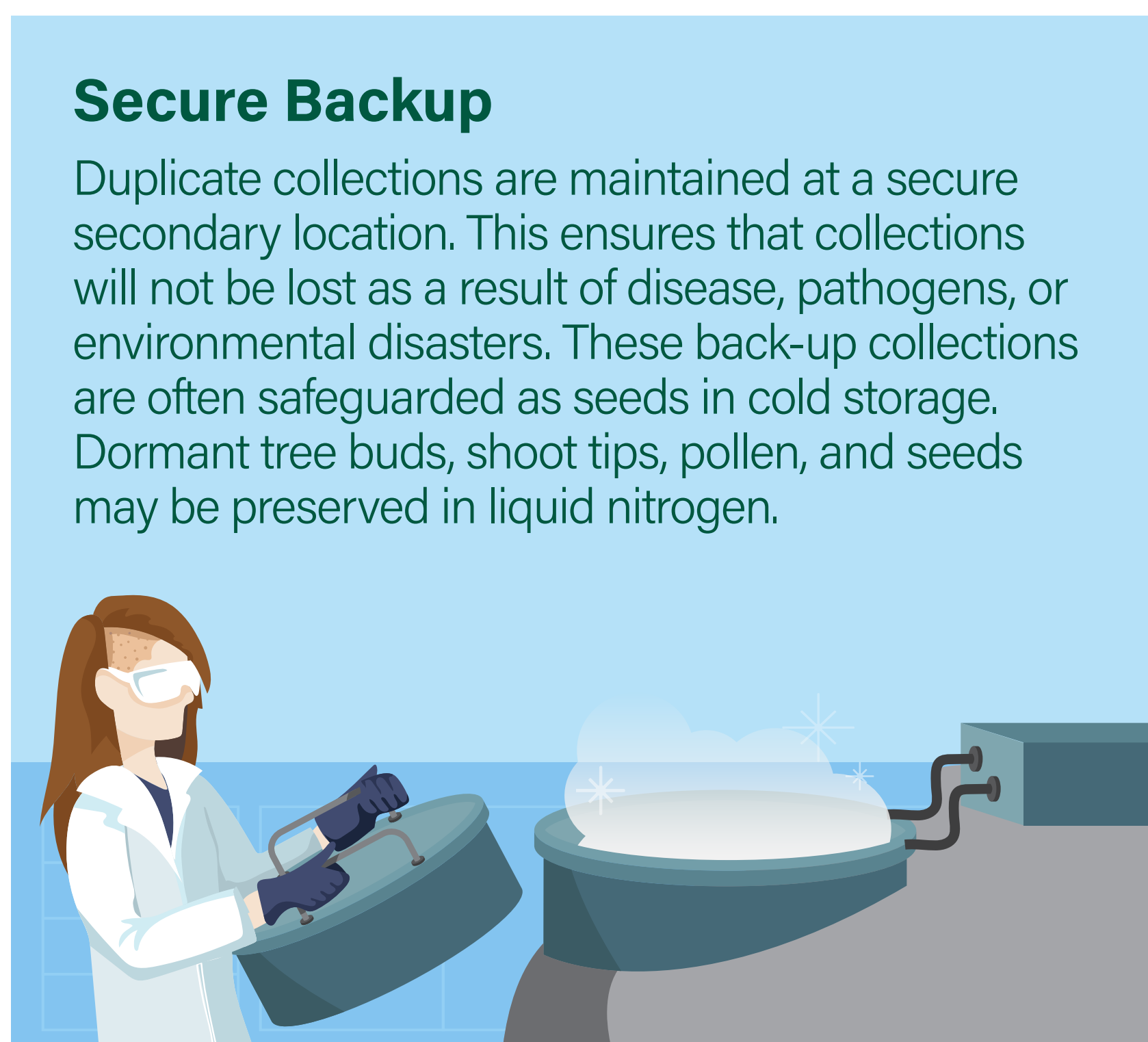
Maintenance

Plant genebanks are responsible for keeping collections alive and healthy. Seeds in cold storage must be periodically germinated to make sure they are still alive. Sometimes collections are maintained as field or greenhouse plants.



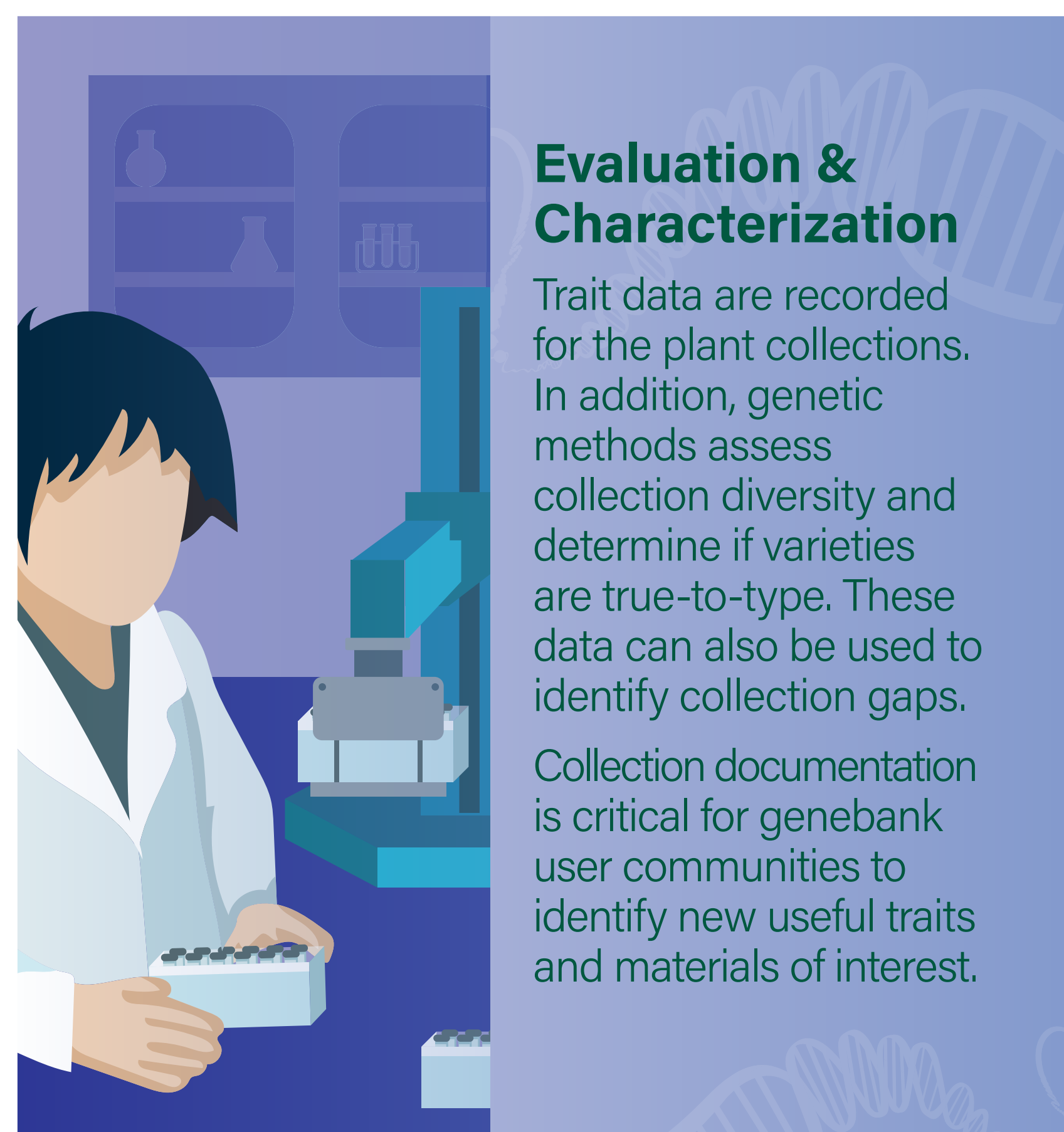
Regeneration

Plants may be grown in the field or greenhouse using techniques that do not alter each sample's genetic composition.



Secure Backup

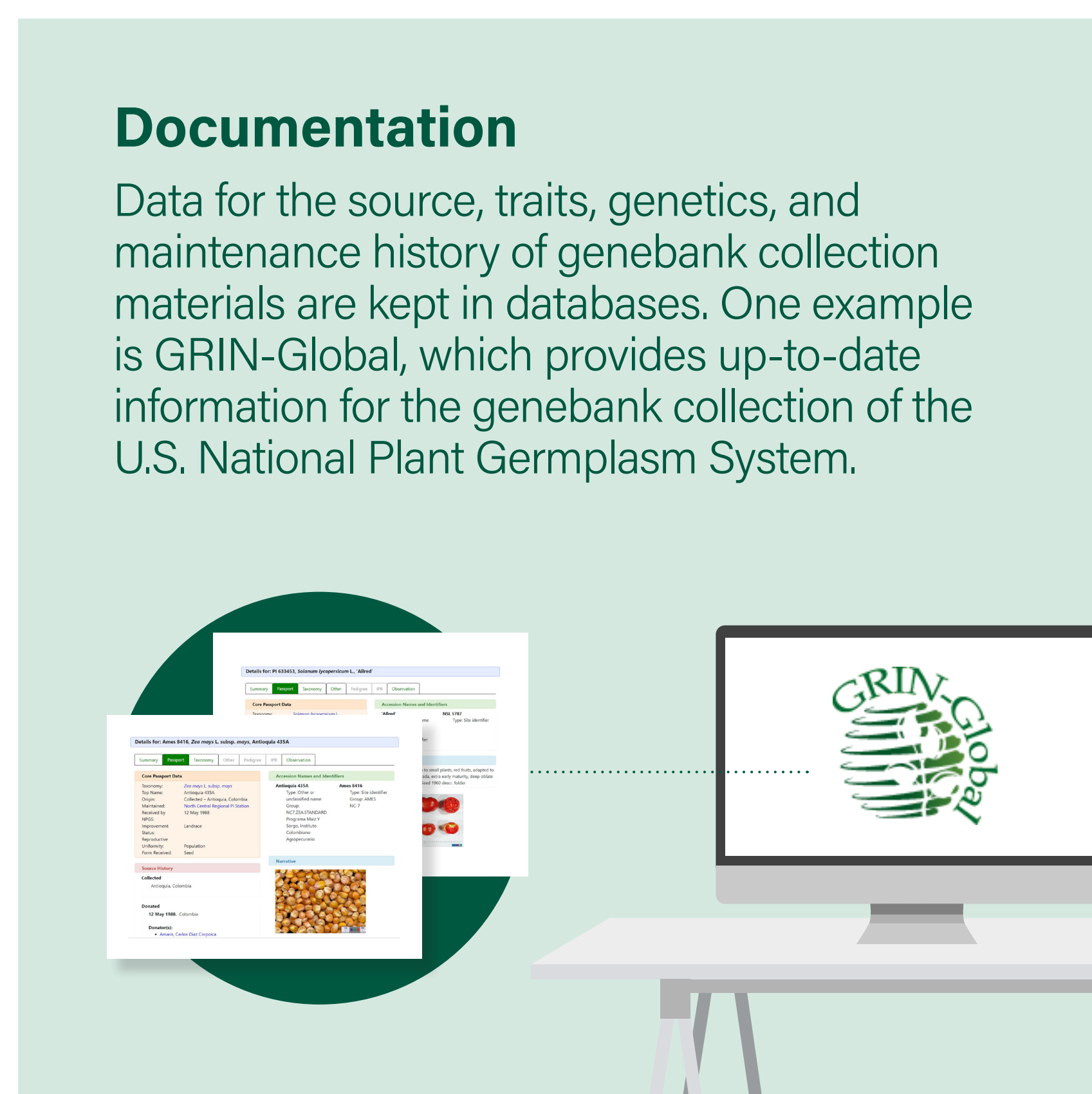
Duplicate collections are maintained at a secure secondary location. This ensures that collections will not be lost as a result of disease, pathogens, or environmental disasters. These back-up collections are often safeguarded as seeds in cold storage. Dormant tree buds, shoot tips, pollen, and seeds may be preserved in liquid nitrogen.



Evaluation & Characterization

Trait data are recorded for the plant collections. In addition, genetic methods assess collection diversity and determine if varieties are true-to-type. These data can also be used to identify collection gaps.

Collection documentation is critical for genebank user communities to identify new useful traits and materials of interest.



Documentation

Data for the source, traits, genetics, and maintenance history of genebank collection materials are kept in databases. One example is GRIN-Global, which provides up-to-date information for the genebank collection of the U.S. National Plant Germplasm System.



Distribution

Samples from plant genebanks are provided to scientists who need access to novel genetic variation and traits for research and breeding.

