

National Laboratory for Genetic Resources Preservation



United States
Department of
Agriculture

**Agricultural
Research
Service**

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Plant and Animal Genetic Resources Preservation Unit

Securing plant, animal and microbe diversity

Plant Preservation Group- safety backup of plant and microbe collections (NPGS and other designated collections)

NPGS collection backed up: 84% - seed; 18% - clonal

Plant Germplasm Preservation Research Unit

Developing state-of-art tools to improve gene bank management

NPGS Base Collection

Seed



-196° C



-18° C



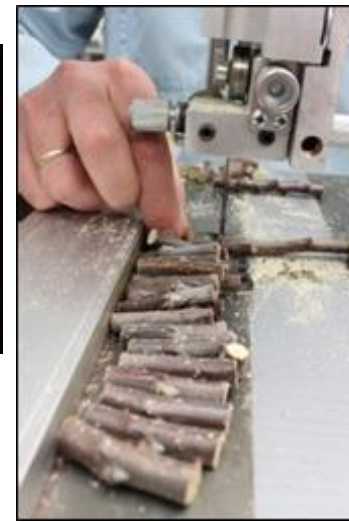
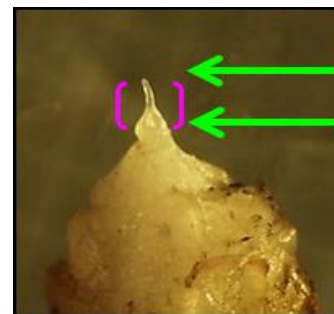
Clonal

- Citrus
- Musa
- Prunus
- Pyrus
- Solanum PVP



Long-term: cryopreservation

Mid-term:
in vitro



Plant Preservation- summary of holdings

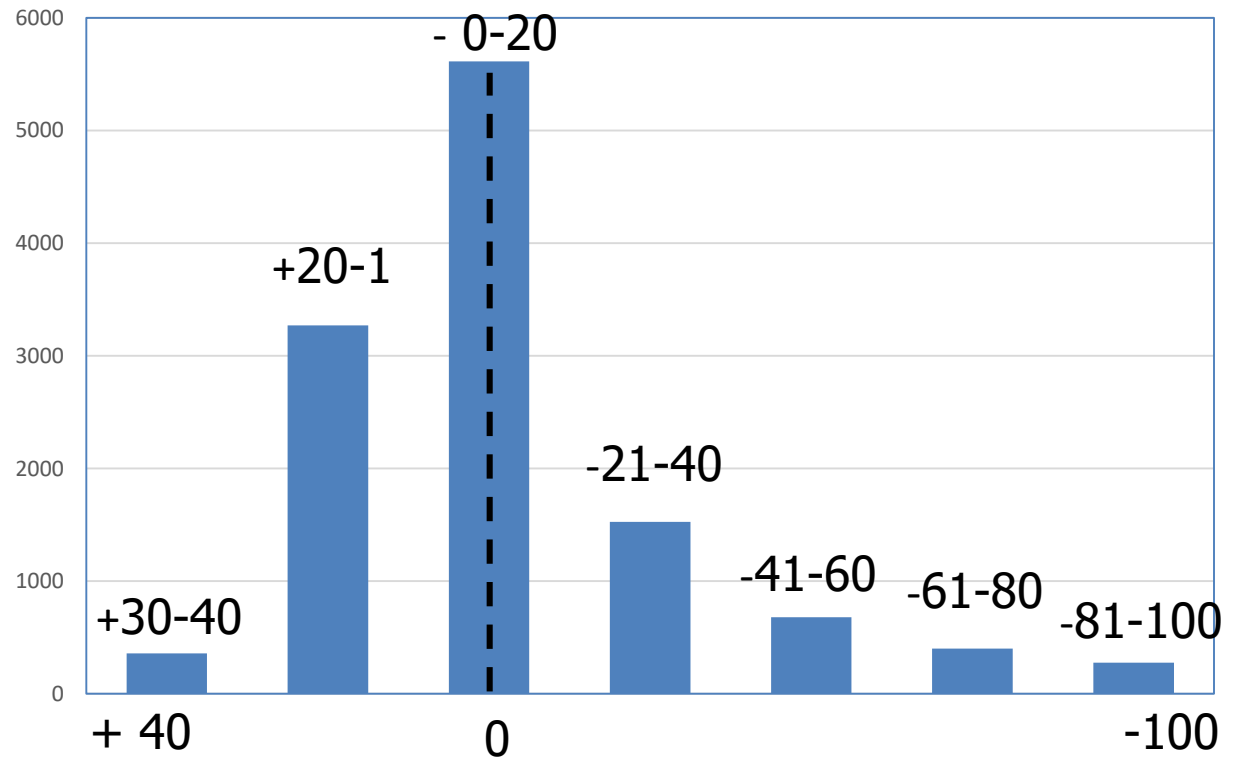
Germplasm		Accessions
Seed		
NPGS Base collection		477,469
Non-NPGS (Black box)		>400,000
Clonal		
NPGS-cryopreservation		10,000
Microbes		
Non-NPGS		111,066

Status of the Base Seed Collection

150,000 base samples have at least one monitor test

2014-2017- focused on monitoring vulnerable base samples
- conducted 22,000 monitor tests

Accessions



71%- viability changed
(\pm) < 20 percentage
points

23%- viability declined
> 20 percentage points

Change in % viability since initial test

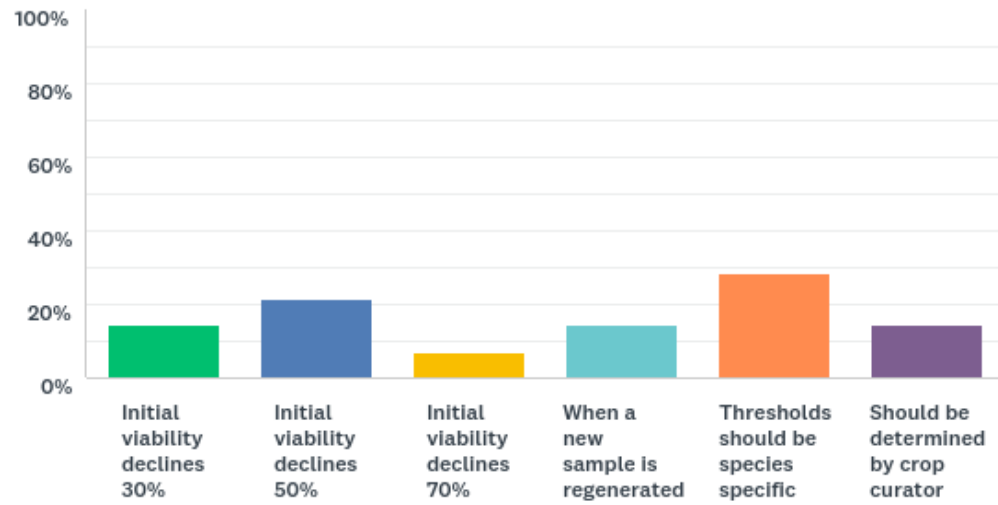
- 2885 base samples (335 taxa) have declined more than 20% since initially tested.
- Yet to be assessed- decline of base samples with monitor tests prior to 2014 (128,000 samples)

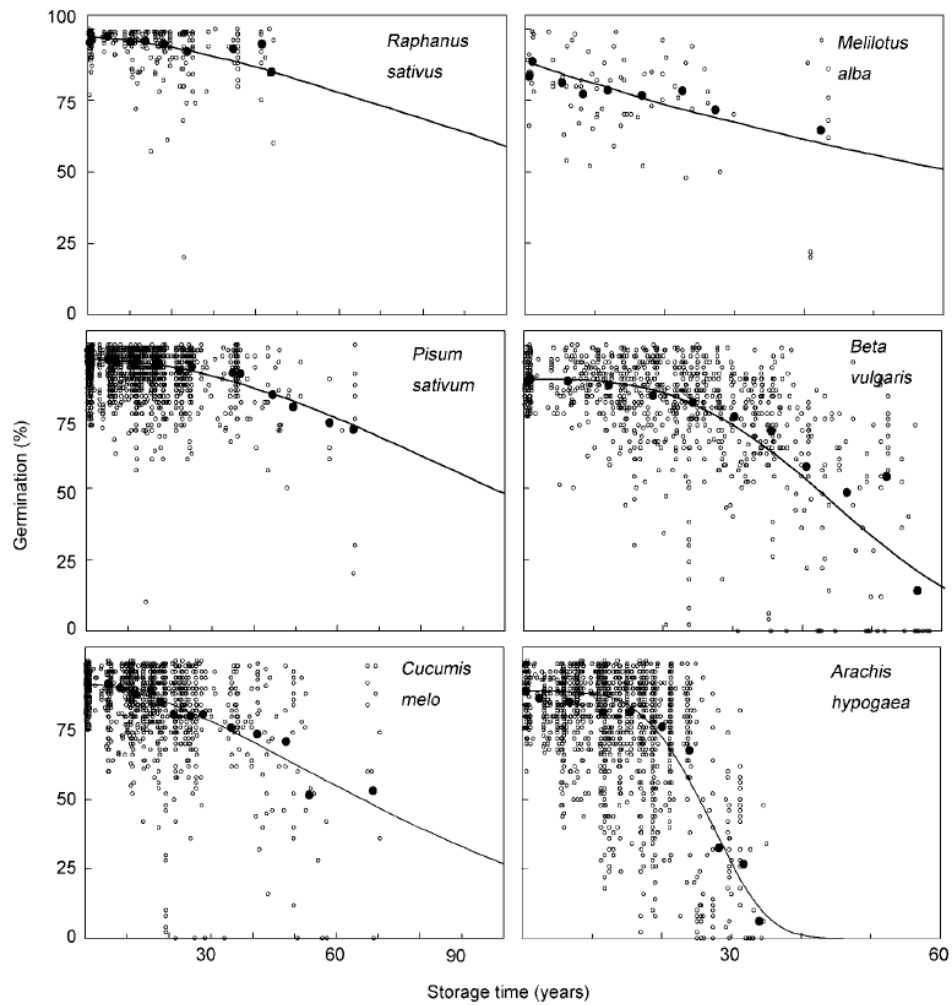
At what point do we replace back-up samples?

Top 15 genera

Genus	# Accessions
Arachis	1056
Brassica	221
Capsicum	169
Sorghum	128
Allium	114
Lactuca	88
Gossypium	75
Paspalum	65
Ricinus	64
Daucus	58
Apium	54
Vigna	49
Oryza	41
Andropogon	39
Hordeum	38

At what point should an NLGRP backup sample be replaced with a new sample?





Walters C, Wheeler LM, Grotenhuis JM (2005).
 Longevity of seeds stored in a genebank: species
 characteristics. Seed Science Research, 15, pp 1-20
 doi:10.1079/SSR2004195

Highlights 2018



Svalbard 10th Anniversary



Sent 13,000 accessions representing 280 taxa. 60% comprised of wheat, barley and soybeans. Our lab receives seed from NPGS active sites around the country, repackages and consolidates into a single shipment. This is the first time we are shipping our seed in plastic totes.



May 16th - Secretary of Agriculture, Dr. Sonny Perdue- Fourth "USDA Back to Our Roots" tour