Curation in the CIMMYT Maize Germplasm Bank: ISO, GRIN-Global, Barcodes

Denise E. Costich
Head, Maize Collection @ CIMMYT Germplasm Bank
Texcoco, Mexico
In October 2012, I left behind my USDA family and moved to Mexico....

The Buckler Lab and IGD
“The Ant Hill” @ Cornell University
Family Day Screening of “Seeds of Time”
27 February 2015
The work of the bank is very diverse....

Pollinations
Characterization
Preparing orders
Studying diversity
Storage
Germination
Testing
Participating in workshops
Regenerations
...and curation is a key component of all that we do...

“Data curation is the active and on-going management of data through its lifecycle of interest and usefulness to scholarship, science, and education; curation activities enable data discovery and retrieval, maintain quality, add value, and provide for re-use over time.”

CIMMYT Wheat & Maize Banks
ISO Certified in 2012 and renewed in 2015

One of only four germplasm banks globally to achieve certification and the first outside of Europe!
Infrastructure that organizes the flow of seed and information
INTRODUCTIONS

Workshop: Applying Germplasm Bank Management Best Practices in Community Seed Reserves (6-12 June 2016)
Ear Selection  Data Capture  Pollinating

Site selection criteria—Creating the field map
Seed moisture testing

Seed cleaning:
What to get rid of....
“Tacos” ready for data-taking

Measuring germination rates
CONSERVATION

What goes on the container labels

Finding the right spot

Ready for the vault
SEED DISTRIBUTION

2015 Stats in detail

Numbers of envelopes

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<tbody>
<tr>
<td>Internal</td>
<td>2036</td>
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<tr>
<td>External</td>
<td>3142</td>
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<td>5178</td>
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Unique Accs. 3550

Users

- CIMMYT Researchers & Breeders
- National Ag Research Institutes
- Educators
- Farmers
- Industry
2015 Stats in detail

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12.6% of the collection

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SEED DISTRIBUTION
Information about the collection is available online

http://mgb.cimmyt.org/gringlobal/search.aspx
Anyone can order seed online

http://www.cimmyt.org/obtainseed
Re-labelling the Entire Collection – 28,000+ Flasks in Active Vault

- Out-dated, unreadable barcoding
- Inventory needed updating
- Curation of passport information required
Re-labelling the Entire Collection – 28,000+ Flasks in Active Vault

- New 2D barcode links directly to database
- Inventory (weights) updated
- Passport data curated
- Fields in label fully compatible with wheat collection to allow the databases to be merged
A Collection by Dr. Angel Kato ● Dec 1966 – Jan 1967

[Map of Mexico and nearby regions with marked locations]
A Collection by Dr. Angel Kato • Dec 1966 – Jan 1967

3 states → 12 days → 60 locations → 144 collections
A Collection by Dr. Angel Kato • Dec 1966 – Jan 1967

3 states → 12 days → 60 locations → 144 collections

...in a “VW bug” loaned by Dr. E. Wellhausen (1st Director General of CIMMYT)!
Kato Collection • Dec 1966 – Jan 1967

Data Collected
• Local name
• Location/Elevation
• Name of the farmer-donor
• Number of ears donated

Photos of all of the collections

The perfect opportunity to compare
ex situ conservation (in MGB) &
in situ conservation (in the farmers’ fields)
Dr. Rafael Ortega-Pazcka
UACH

Francisco Romero
UAEM-Xalostoc

Alex Velazquez
CIMMYT-MGB

Reviewing and curating the Kato Collection
Dry seeds are completely resistant to insect infestations.

The basic concept is: “Get the seeds DRY and maintain them DRY.”

http://www.dryingbeads.org/
We have the seed, the expertise, and the mandate...

We hope to help farmers like these...
Thank you for your interest!