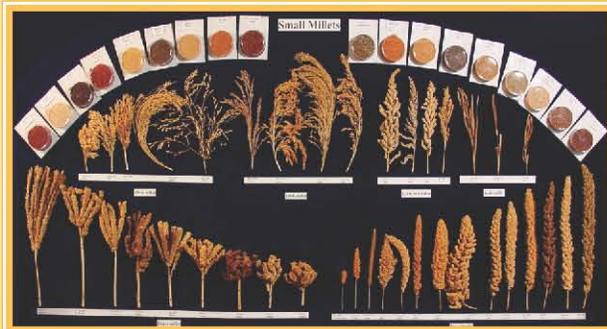


Managing and Enhancing the Use of Germplasm – Strategies and Methodologies



Technical Manual no. 10

Managing and Enhancing the Use of Germplasm – Strategies and Methodologies

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Germplasm Distribution

Distribution involves supply of representative seed samples from the genebank in response to requests from users.

- Distribute seeds only from active or working collections.
- Send the seeds in a way that they reach their destination in good condition.
- The environmental conditions during transport can be detrimental to seed quality. Therefore distribute seeds in moisture proof envelopes.

6A. Procedures for germplasm distribution within India

- Check the inventory database to see if seed quantity in genebank is sufficient for distribution.

Distribute only if a minimum of four times the number of seeds required for one regeneration cycle remain in store after meeting the request (ie, approximately 40–50 g in cereals, 100–150 g in legumes).

When seed quantity is inadequate for distribution, inform the requestor that the accessions cannot be supplied until after regeneration. Advise the crop curator to program the accessions for regeneration.

- Check the passport data to see if the requested accessions are designated to FAO and freely available for distribution.

If the requested accession is undesignated or has restrictions on distribution under the Material Acquisition Agreement with donors, inform the requestor about the nonavailability of the accession.

- If seeds are available for distribution, register the request by assigning a request number.
- Prepare the list of accessions available for distribution and obtain a SMTA signed for the selected accessions by sending:
 - SMTA for registered genebank accessions.
 - breeding Material Order Form and SMTA for ICRISAT developed varieties registered as genebank accessions but not designated to FAO (Annexure 6A.1).
- Generate labels for the selected accessions using GIMS.
- Paste the labels on seed envelopes used for distributing the seeds to requestor (Fig. 6A.1).
- Use:
 - coin envelopes for cereals, and
 - metal fold paper envelopes or aluminum foil packets for other crops.
- Check the inventory file and note the location of the container in the genebank.

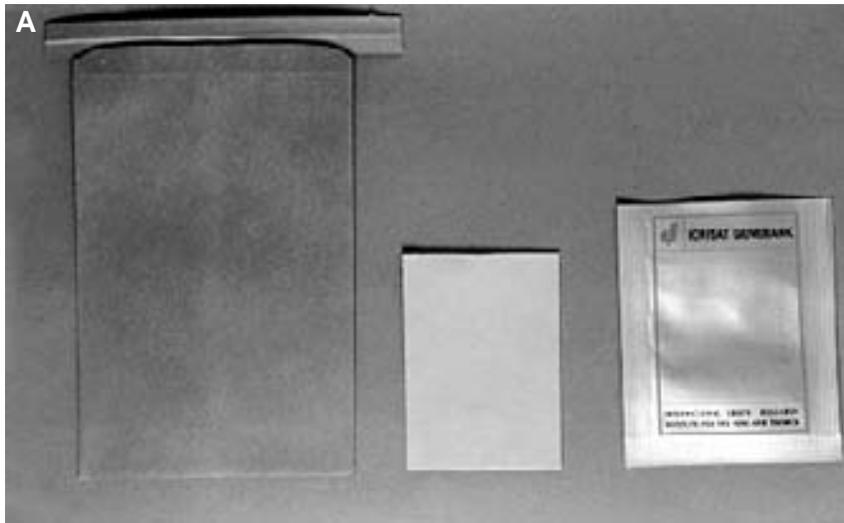


Figure 6A.1. Seed packets (A) and containers (B) used for seed distribution at ICRISAT genebank.

- Pick the containers from the genebank and move them out into a dehumidified room **the previous evening** to allow them to warm up to room temperature before opening. (If the number of samples to be distributed is small, then draw the seeds from containers in the genebank itself).
- Ensure absolute accuracy in identification of accessions while drawing the seed from the genebank.
- Open the container and quickly draw the required amount of seeds into the labeled envelopes (Table 6A.1).

Use random sampling technique so that a good representation of accession is provided.

Table 6A.1. Standard quantity of seed distributed per accession from ICRISAT genebank.

Crop	Quantity (g/nos.)
Sorghum	6 g
Millets	5 g
Chickpea	100 seeds
Pigeonpea	200 seeds
Groundnut	50-100 seeds
Wild species (any crop)	15-20 seeds

- Close the container immediately after removing the seeds for distribution to prevent moisture ingress.

Germplasm seeds are valuable, therefore they should be packed carefully for dispatch. The packing should ensure safety of the seeds and prevent contamination by insects or pathogens during transit.

- Proofread the list of accessions drawn from the genebank with the labels on the envelopes.
 - Print the final list with minimum passport details (ICRISAT identification number, alternate identity, source country, location and biological status), characterization data used for verification of accessions (see Section 8 for details) and any other additional information as requested by the consignee.
 - Prepare a covering letter.
 - Pack the seed envelopes, covering letter and the seed list in a jiffy bag (if the number of samples is small) or a cardboard box and label it with the complete address of the consignee.
- Use filling material to avoid damage to seeds during transit.**
- Send the seed parcels by registered post or airmail or airfreight to avoid delay and possible loss in seed quality during transit.
 - Record the shipment details into the distribution data file.
 - Update inventory data deducting the seed quantity supplied in each accession.

6B. Procedures for germplasm distribution to other countries

Follow the same procedure in selecting accessions and fulfilling the SMTA requirement of FAO designated accessions. Additional requirements include:

- Check if the quarantine regulations of the country require an Import Permit (IP) for exporting the seeds to the requester (see Appendix 2).

If IP is required but not sent along with seed request, write to the requester and obtain an IP.

- Draw the seeds from the genebank as described above and prepare seed lists.
- Complete the Request for Export of Seed/Plant/Plant Products form (Annexure 6B.1).

- Check with the plant quarantine office if additional declarations are required such as need for certification that seeds are free from specific diseases and pests.
- Send the seed samples with the export request and IP to the Plant Quarantine Laboratory (PQL) for exit quarantine certification and issue of Phytosanitary Certificate (Annexure 6B.2).
- When the samples are ready, prepare a covering letter and the final list of accessions (if any accessions were detained at quarantine) along with passport data and send to the Plant Quarantine Laboratory to dispatch along with seeds.
- Record the shipment details in the distribution data file.
- Update seed inventory by deducting the quantity of seeds supplied.

6C. Procedures for germplasm distribution within ICRISAT

Seed distribution to ICRISAT staff is also subject to the provisions of the agreement between ICRISAT and FAO. Requests should be made on the Internal Germplasm Order Form (Annexure 6C.1).

Processing internal seed request

- Check the availability of seeds.
- Draw the sample from genebank.
- Prepare final list along with passport details and any other additional information requested by consignee.
- Deliver the seeds and obtain acknowledgement of receipt.
- Update the distribution and inventory databases.

Seeds from the genebank are distributed on the understanding that they will be used for ICRISAT's own research. Third party distribution is not allowed. Requests for registered germplasm accessions received by ICRISAT staff from their collaborators should be forwarded to the genebank to distribute according to the provisions of ICRISAT/FAO Agreement.



- ***Do not send designated germplasm without an SMTA.***
- ***Accessions not designated to FAO and accessions acquired after 1993 should be supplied according to the provisions of agreement with the donor institute or country.***
- ***If no agreement is made for such materials, do not supply until its status is clarified with the donors.***

Distribution of vegetatively propagated species

Distribute stem cuttings for species maintained as live plants (eg, *Arachis* and *Pennisetum* spp.):

- Cut the rhizomes into 15 cm long pieces.
- Roll them in moist paper towels and wrap them with polyethylene film.
- Pack them carefully in jiffy bags and send by the fastest means to reach destination along with instruction if any, for establishing them.

6D. Feedback on germplasm distribution

Obtain feedback on the usefulness of germplasm supplied to users at half-yearly intervals. This will help in identifying deficiencies in service, and also to know of any new traits or sources of resistance identified by the users. The form used to obtain feedback is shown as Annexure 6D.1 and 6D.2 (Annexure 6D.1 for external users and 6D.2 for users within the institute).

6E. Documenting germplasm distribution data

The genebank curator needs to keep a record of the recipients of germplasm, number of samples sent, the purpose for which the request was made, etc. The information could be better maintained in two files with a common link field. At ICRISAT, the distribution descriptors are organized into two files namely:

- A master file with details of the consignee, number of accessions sent, etc, and
- Accession details file (list of material sent).

A 'Reference number' assigned while registering the seed request serves as a link field for the two files.

The following descriptors are suggested for the distribution data files.

Master file

Reference number: Reference number assigned in sequence starting from 1 each year.

Crop: Crop name.

Consignee: Consignee's last name followed by abbreviated first and second names.

Designation of consignee: Designation of the consignee, eg, Plant Breeder, Assistant Professor, etc.

Organization: Name of the organization in full.

Address: Address of the consignee.

Location: City or town where the organization is located.

Country: Country name of consignee.

User status: Status of organization requesting germplasm (eg, commercial company, national institute, non-governmental organization, individual, etc).

Date of request: Date on which the request was received.

Date supply: Date on which seed samples were sent.

Number of samples: Number of samples sent.

Purpose: Purpose for which seeds were requested.

Remarks: Any significant observation.

Accession details file

Reference number: Reference number assigned (link filed to master file).

Crop: Crop name.

Accession number: Accession numbers distributed entered in sequence.

Quantity: Quantity of seed distributed in grams.

Remarks: Any significant observation.



- **Assess the amount of assembled diversity utilized in crop improvement.**
- **Assess the patterns of demand for types of germplasm by different users.**
- **If demand is restricted to certain accessions, select other accessions with same traits for supply.**

6F. Germplasm repatriation

National programs occasionally request repatriation of germplasm donated by them to:

- Establish or add to the genebank of their own
- Rebuild their collections lost due to inadequate facilities, natural calamities, civil disorder, etc.

Genebank personnel:

- Ask the requestor for the list of accessions required to be repatriated
- Supply seed samples if the distribution does not reduce the stocks below accepted levels for conservation.

The quantity distributed should be sufficient to conduct at least two regenerations (see Section 9).

- Undertake regeneration for accessions with insufficient seed stocks.

If regeneration poses an undue burden on the technical and financial resources, ask the requestor to cover the actual cost of multiplying the accessions.