

Implementation of the multilateral system by IRRI

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Outline

- **What we do because we have to, and what we do because we choose to**
 - Germplasm scope
 - Germplasm tracking
 - Providing data
- **Implications for data management**
- **Identifying the status of germplasm under the MLS**

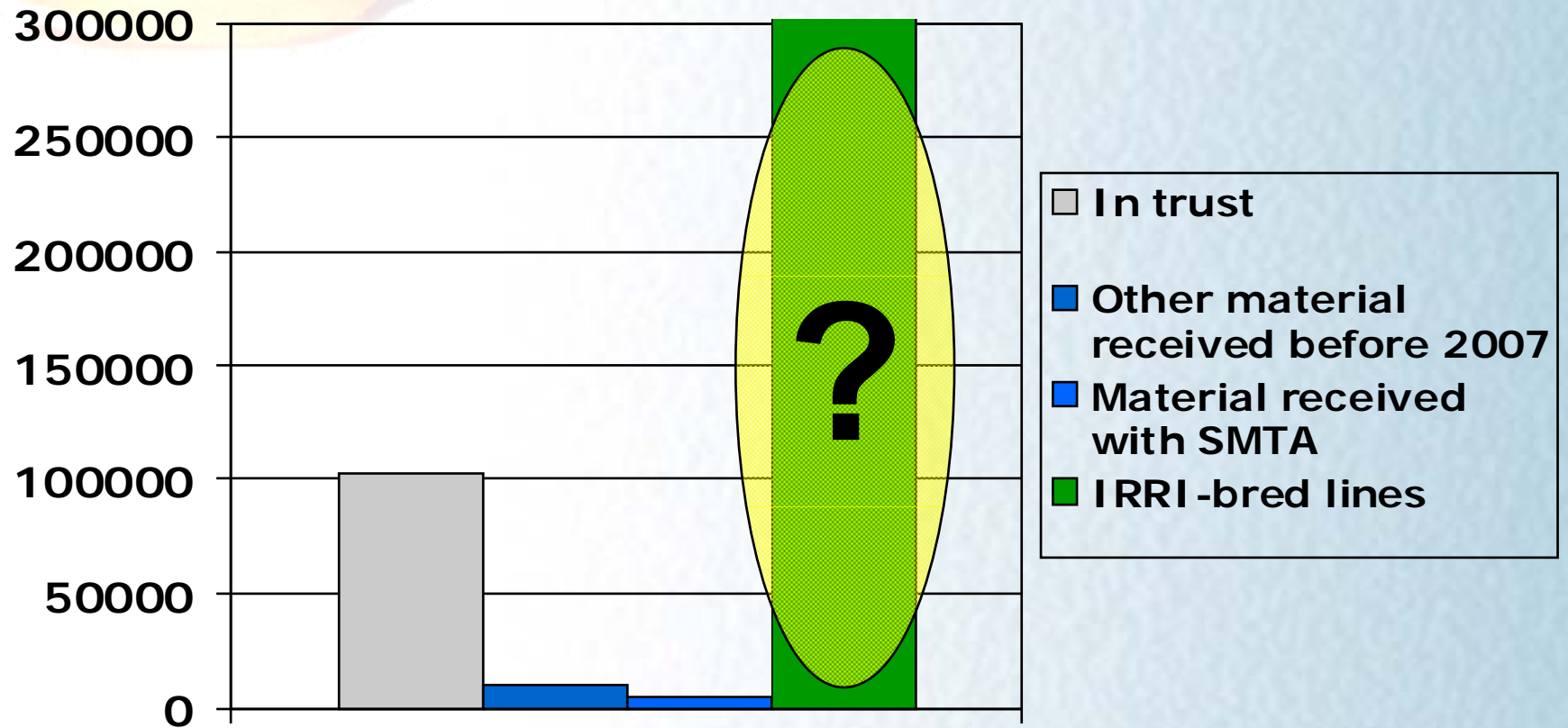
Germplasm distribution to CPs: obligations

- **In Trust germplasm**
Treaty article 15: facilitate access through SMTA
 - As long as we conserve, facilitate access through SMTA
 - Comply with SMTA article 5 as provider
 - Provide to recipients that comply with SMTA article 6
- **Material received after 1 Jan 2007 with SMTA**
 - Comply with SMTA article 6 as recipient
 - If we conserve, facilitate access through SMTA
- **Material derived from material received after 1 Jan 2007 with SMTA**
 - Comply with SMTA article 6
 - If we distribute, use SMTA: PGRFA under development

Material not under the Treaty

- **Material acquired before 1 Jan 2007, not held in trust**
- **Material acquired after 1 Jan 2007, not with SMTA**
- **Material developed by IRRI and/or partners, not held in trust and not developed from material received with SMTA**

Germplasm held at IRRI



IRRI's improved lines not developed from material received with SMTA

- **Conventional implementation of Treaty:
distribute without SMTA**
 - Not under MLS
 - Because not in trust
 - Not PGRFA under development *sensu* SMTA
 - Because not derived from Material received with SMTA
 - Same for PGRFA derived from future transfers from genebank to breeder
 - Because no SMTA for internal transfers
- **99.9% derived from in trust germplasm**
 - Not in spirit of Treaty to distribute without SMTA
 - Complex admin – multiple MTAs, gradual transition

IRRI's PGRFA under development: IRRI's choice

- **Voluntarily retroactive:**
 - In trust germplasm subject to SMTA article 6
 - ⇒ Derived materials =
PGRFA under development *sensu* SMTA
- **Voluntarily use SMTA for breeding lines with no identifiable MLS ancestors**
 - qualify as MLS ancestors of future PGRFA under development
- **Complies with spirit of Treaty**
- **Simple admin: 1 MTA, no gradual transition**

INGER germplasm

- **INGER = sets of elite lines contributed by IRRI breeders and NARES partners**
 - Members a mixture of
 - Party
 - Under the jurisdiction of Party
 - From non-Party countries
 - Centralised in INGER HQ (IRRI), redistributed to partners
- **INGER's agreed choice:**
 - SMTA to be used for all INGER germplasm shipments
 - To IRRI and from IRRI
 - To/From Party and non-Party
 - As PGRFA under development if material has MLS ancestors
 - Otherwise as regular MLS germplasm

Tracking germplasm

- **SMTA Art 5a)**
 - Provider undertakes that ... access shall be accorded ... without the need to track individual accessions
- **Recipient must know**
 - Which accessions received with SMTA
 - 6.1, 6.2, 6.3, 6.4, 6.5, 6.9
 - Which accessions received with SMTA / 6.11
 - Annex 3 para 3
 - Which PGRFA under development have been derived from each accession received (6.5b)
 - Which products have been derived from at least one accession received with SMTA (6.7, 6.8, 6.10, 6.11)

⇒ **Track use!**

*Obligations and choices
for providing access to data*

Making available data: obligations not resolved

- **SMTA Art. 5(e)**
 - “The Provider shall periodically inform the Governing Body about the Material Transfer Agreements entered into, according to a schedule to be established by the Governing Body”
 - No guidance
- **SMTA Art. 6.9**
 - “The Recipient shall make available to the Multilateral System, through the information system provided for in Article 17 of the Treaty, all non-confidential information that results from research and development carried out on the Material”
 - No guidance

Making available data: obligations met

- **SMTA Art. 5(b)**
 - The provider must make available “all passport data and ... any other associated available non-confidential descriptive information”
- **SMTA Art 6.5(a)**
 - In the case that the Recipient transfers a PGRFA under Development ... the Recipient shall identify, in Annex 1 ... the Material received from the Multilateral System
- **SMTA Annex 1**
 - “This Annex contains a list of the Material provided under this Agreement, including the associated information referred to in Article 5b. This information is either provided below or can be obtained at the following website: (URL)”

Making available data: Questions and IRRI's answers (A)

- **What goes in Annex 1?**
 - Minimum obligatory
 - "list of the Material"
 - MLS ancestors of PGRFA under development
 - IRRI's choice: include only the minimum required
 - In the format "Unique ID (preferred name)"
 - With URL for "associated information"
- **What goes in the URL?**
 - "All passport data and ... other associated available non-confidential descriptive information" that is not in annex 1

Making available data: Questions and IRRI's answers (B)

- **To whom should the information be made available?**
 - No guidance
 - IRRI's choice:
 - Make all information available over public URL
- **How should the information be made available?**
 - No guidance
 - IRRI's choice:
 - Assemble all data on the Material in each consignment at a URL specific to the consignment
 - So the user doesn't have to search through the main database

Making available the information

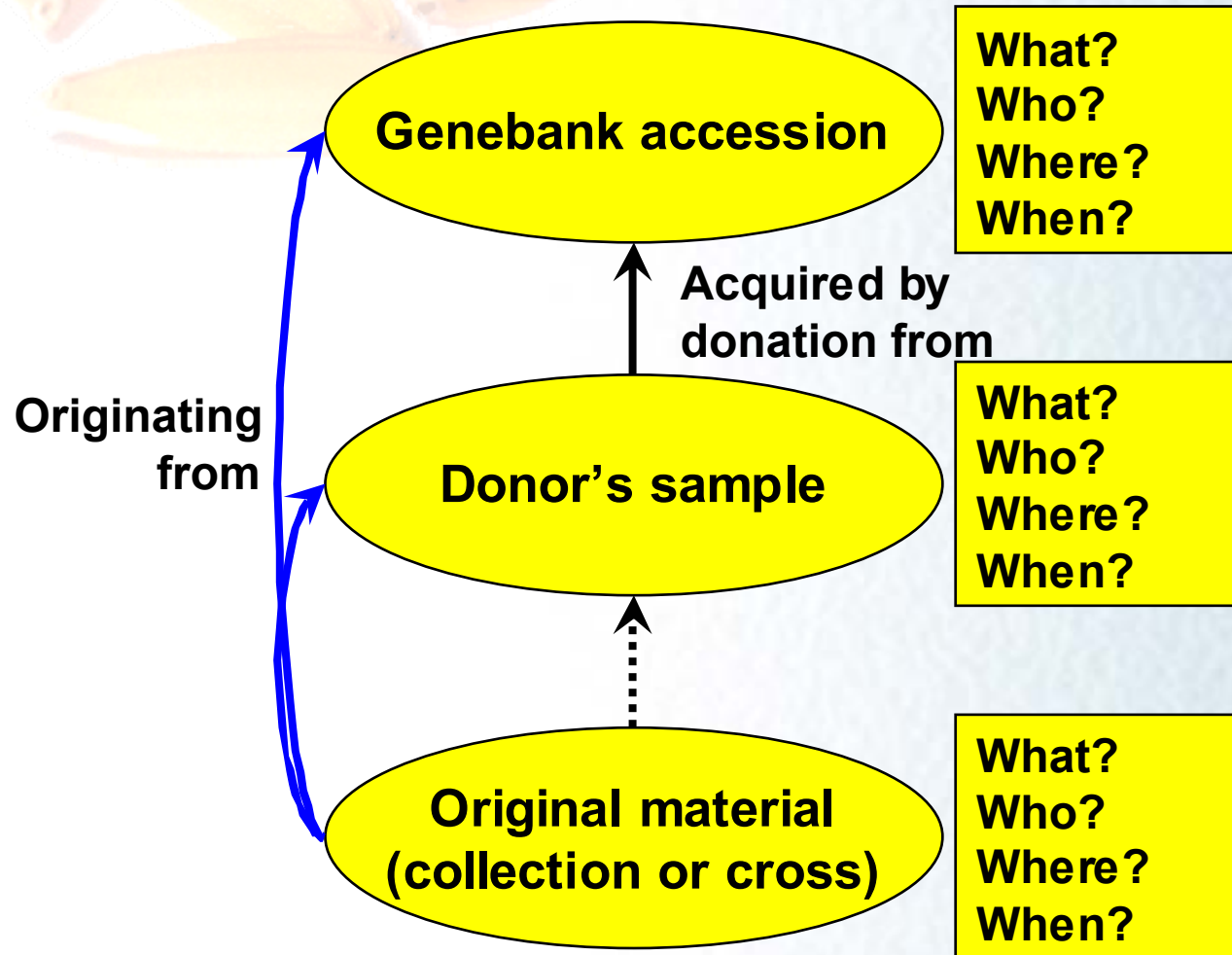
- www.iris.irri.org/smta
- **An example:**
 - SMTA www.iris.irri.org/smta/files/SMTA2008-0495.pdf
 - Data www.iris.irri.org/smta/listEntriesData.do?studyId=-1004&page=1&pageSize=1000&method=listEntriesData&smtaId=SMTA2008-0495

Implications for data management

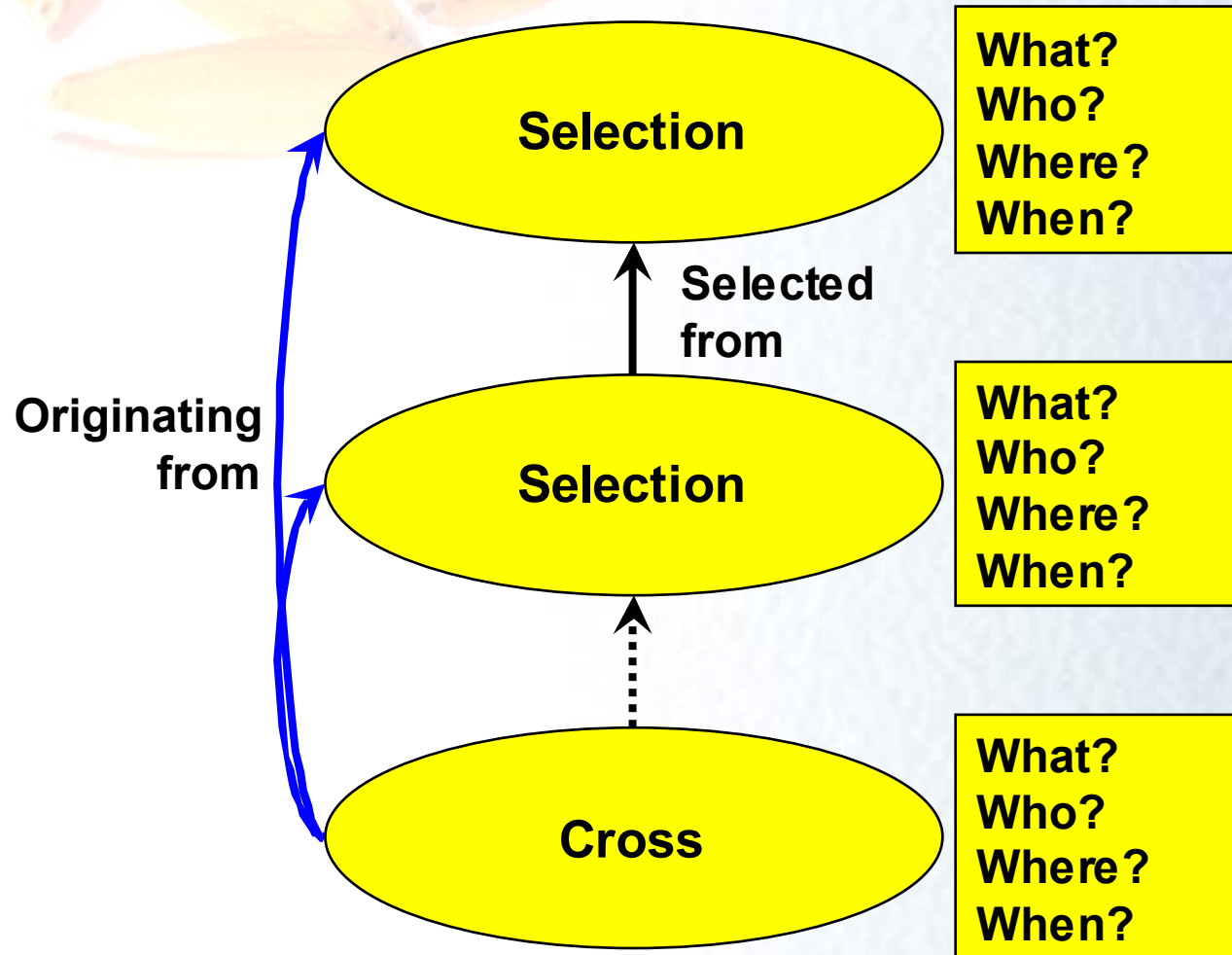
Genebank's view of passport data: MCPD

Genebank accession	Donor	Origin
<p>What? Who? Where? When? (How=acquired from donor)</p>	<p>What? Who? Where? When? (How=acquired directly or indirectly from origin)</p>	<p>What? Who? Where? When? How?</p>

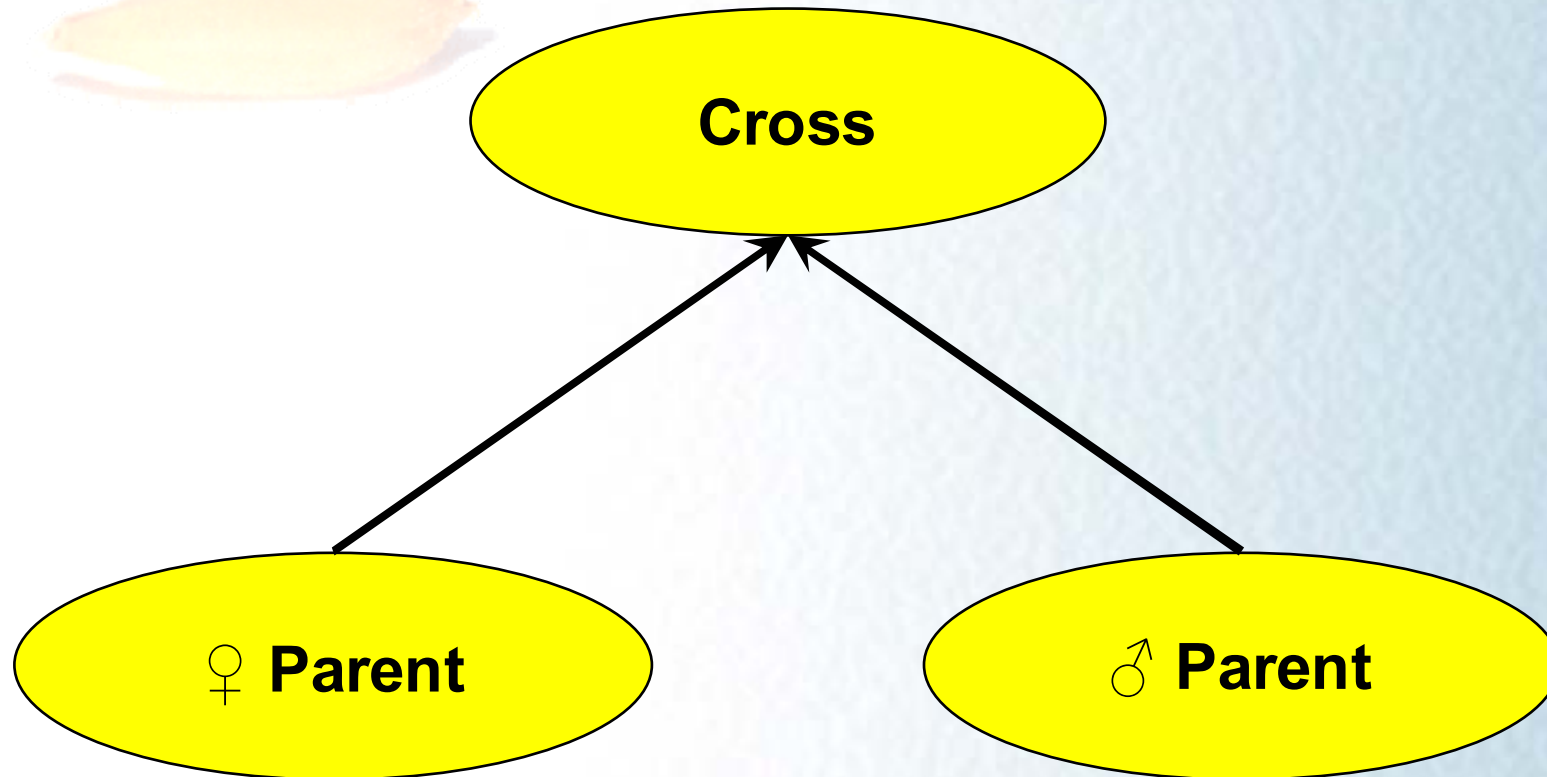
Breeder's view of MCPD



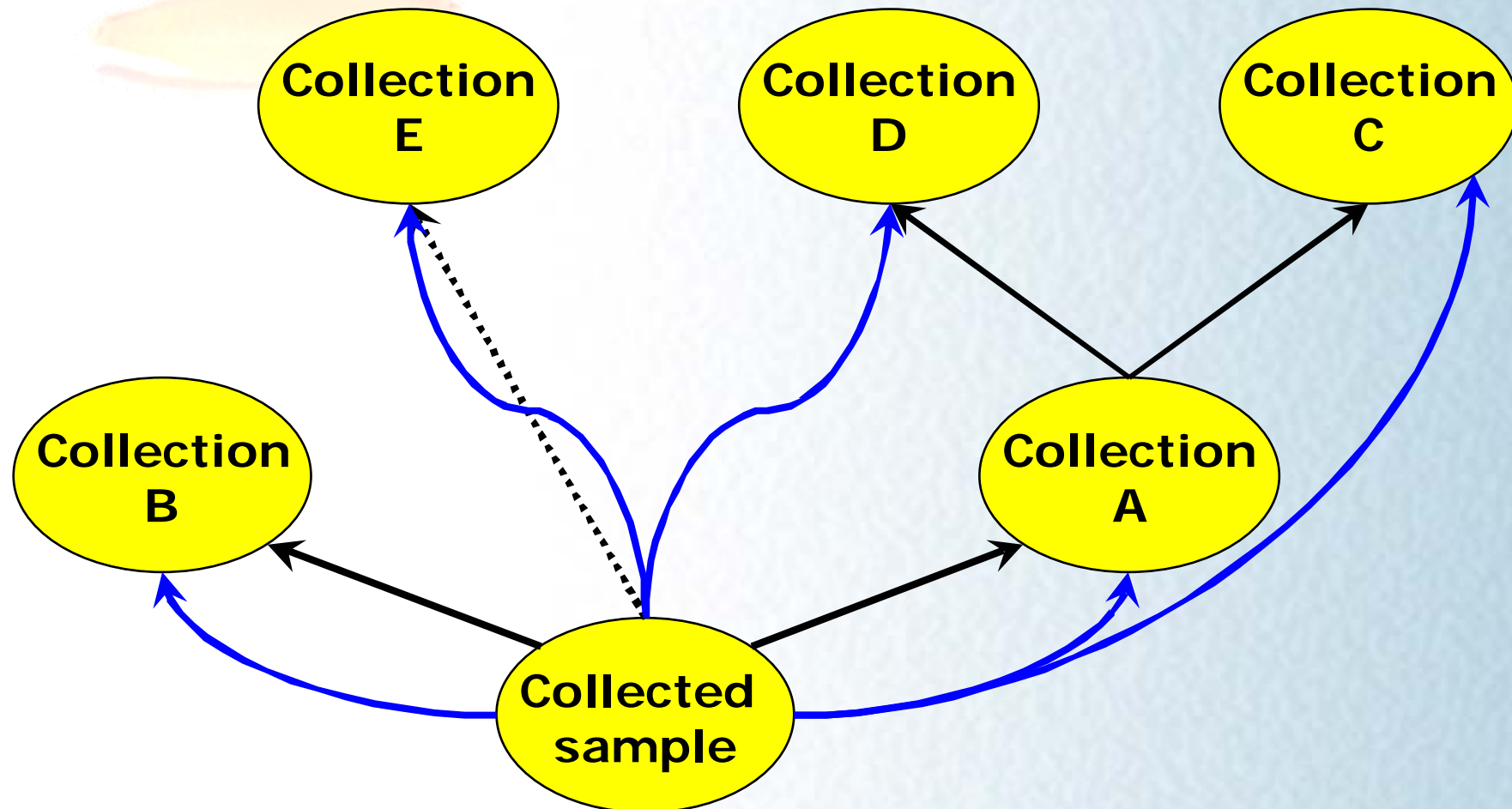
Breeder's selections



Breeder's cross



Managing duplicates



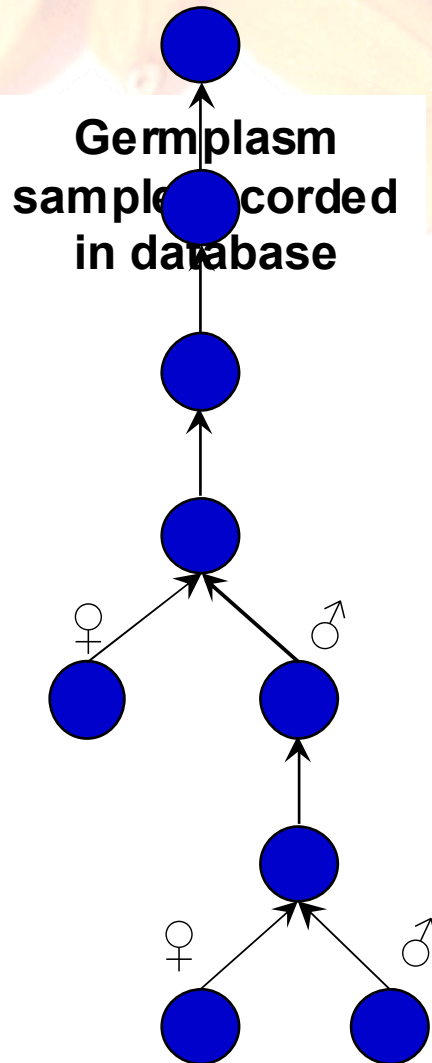
Additional data for IP management: IP Attributes attached to GIDs affected

- **Usage subject to contractual conditions?**
 - Reference to documents
 - Summary note:
 - Incoming SMTA
 - Redistribution prohibited
 - Redistribution with restrictions
 - Pass-through conditions
- **Date incorporated into MLS**
 - In trust germplasm
 - Pre-2007 material with retroactive permission from provider
 - Post-2007 material received with SMTA

IT aspects of implementation

Field	Content
GID	Internal ID for a germplasm sample
METHN	How was it created? Imported, selected, crossed ...
GNPGS	Number of parents (-1 if selected or maintained)
GPID1	Mother; or original cross or collected sample
GPID2	Father; or donor or immediate single parent
GDATE	Date GID created
GLOCN	Location where sample was created / is managed
MLS attribute	Date incorporated into MLS
IP attribute	Reference to any other IP restrictions

Decision workflow for MLS status



Marked MLS? → distribute with SMTA
 No: marked not available with SMTA? → don't use SMTA
 No: → trace pedigree step 1

Trace pedigree step 1: single-parent descent (maintaining genotype or selecting subset) to most recent cross:
 Marked MLS or not available with SMTA?
 → status of sample = status of parent
 No: non-IRRI? → consult provider
 No: → trace pedigree step 2

Trace pedigree step 2: walk whole pedigree checking every ancestor for:
 Marked unavailable with pass-through to derivatives
 → don't distribute sample
 Marked MLS?
 → sample = PGRFA under development with MLS ancestor
 No ancestors as above: → distribute as normal MLS

MLS algorithm result: 3 lists for SMTA annex 1

1. MLS germplasm

- In trust accessions
- Material received with SMTA
- Pre-2007 receipt marked MLS by provider
- Pre-2007 IRRI material voluntarily marked MLS
- Pre-2007 IRRI material without MLS ancestors

2. PGRFA under development

- IRRI or INGER material with ≥ 1 MLS ancestor

3. MLS ancestors of PGRFA under development