Integrated Breeding Database Schema and Business Rules

IBDB V2: Released in June 2013

Each breeding programme in managed through the IBP Breeding Management System is associated with one shared crop database containing public crop information, and one local crop database containing the private data for that project. The workbench may host any number of crops, and for each crop there may be several programs accessing the same shared crop database. Programmes are always specific to one crop, and do not share local databases. Data must be uploaded to the shared crop database for all programmes in that crop to have access to it.

The local and central crop databases are modular and have identical structure. The modular structure ensures that new or improved modules can be substituted for old ones with minimum disruption. All primary keys in the shared database are positive integers, and all primary keys in the local database are negative integer values. Foreign keys in the central database can only point to primary keys in that database, but foreign keys in the local database can point to primary keys in the same local database (negative) or to primary keys in the associated central database (positive). The middleware provides a data access API which integrates data across the local and central databases for a project.

Each crop database (shared and local) has the following modules:

1. Introduction
2. Genealogy Management System (GMS)
3. Germplasm List Management Module
4. Seed Inventory Management System (IMS)
5. Location management Module (LMM)
6. Phenotyping Data Management System (DMS)
7. Genotyping Data Management System (GDMS)
8. Administration Module:
    a. Users and Access,
    b. Bibliographic References,
    c. People and Institutes,
    d. File Links

The structure and function of each module is detailed in the attached documents identified by module number.

There is a Workbench DB which manages all the housekeeping for each project in the workbench. There is user access control at the workbench level and at the programme level.