

# Breeding Management System (BMS)

The Breeding Management System (BMS) is a comprehensive suite of mutually compatible software applications that work together to help breeders and researchers manage their projects and collect, store and analyse their research data, in order to facilitate more economic and accelerated cultivar development. These tools accommodate common breeding schemes, from conventional breeding through increasing levels of marker use, and are available as standalone applications or as a single consolidated system for greater breeding efficiency:

## Key components

### Programme and information management

Customise preferences and monitor programme activities from the workbench, a dashboard application with integrated tools to manage and query crop information across the system

- Workbench: a dashboard view to get a complete picture of your projects and access all system tools.
- Study browser, breeder queries, ontology manager, germplasm and data import modules: tools for overall information management, data searches and quality control throughout the system.

### Marker-assisted breeding

Select germplasm and design crosses by complementing phenotypic selection with marker technology, for integrated breeding decisions

- Breeding Planner: to identify the most suitable breeding strategy for specific breeding objectives.
- GDMS: a genotyping data management module to support use of molecular markers and genetic diversity.
- OptiMAS: a decision tool to support selection of genotypes to be crossed or advanced.
- Genotyping visualisation tools with graphical displays to facilitate germplasm selection.

### Breeding activities—Interconnected fieldbook applications to:

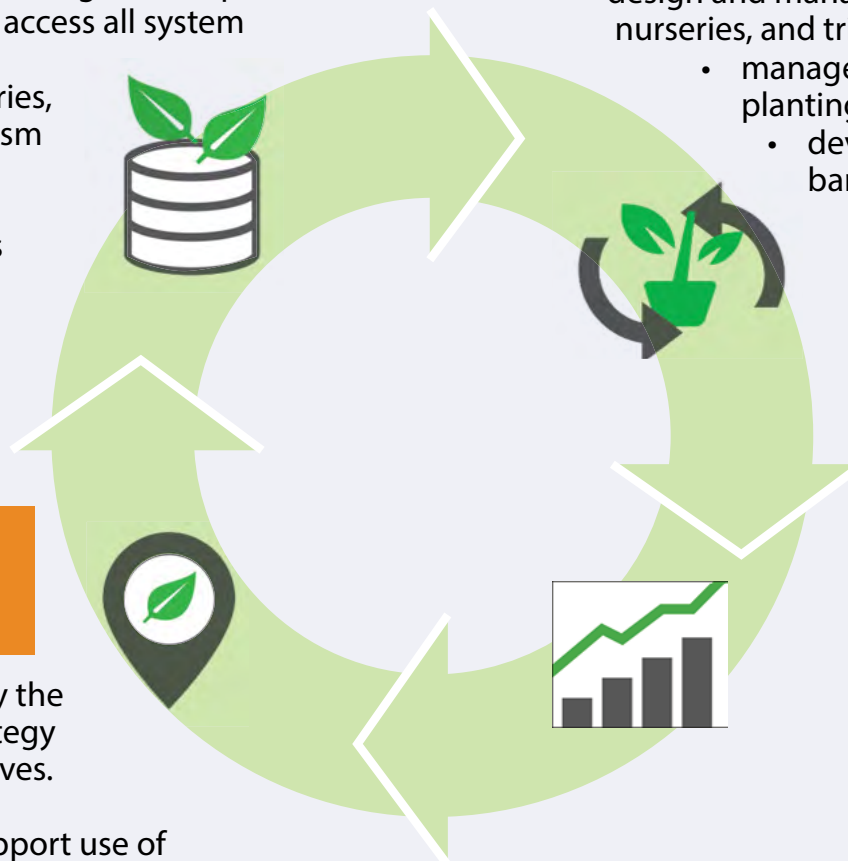
Prepare trials and nurseries, manage seed inventories and keep continuous genealogy records season after season

- design and manage germplasm lists, crosses, nurseries, and trials;
  - manage seed storage, distribution, planting and harvesting;
  - develop field maps, labels and barcodes to assist planting.

### Statistical analysis

Analyse field and lab data with powerful statistics and mixed model comparisons of locations and genotypes

- Breeding View: select from various analytical workflows to analyse multiple phenotypic datasets in one run: single-site analysis; multi-site analysis; multi-year multi-site analysis. It can also be used as a standalone tool for QTL analysis.



“The new BMS upgrade is great; it will all have a great impact on our work. Personally, I have gained a new understanding of modern breeding... This knowledge and these tools should be integrated across national programmes. It will simplify our job and day-to-day work.”

– Abraham Attah Shaibu, PhD Student and Rice Breeder, National Cereals Research Institute Badeggi, Nigeria



Credit (photo in tablet): Neil Palmer/CIAT

#### Deploy

Personalise your workspace, customise crop ontology, keep your data safe and share it with team members.

#### Bring it in the field

Use your handheld device for electronic data capture and to create portable field maps, labels and data collection sheets.

#### Get support

Find us online to access breeding products and services, technical support, educational material, peer communities and more.