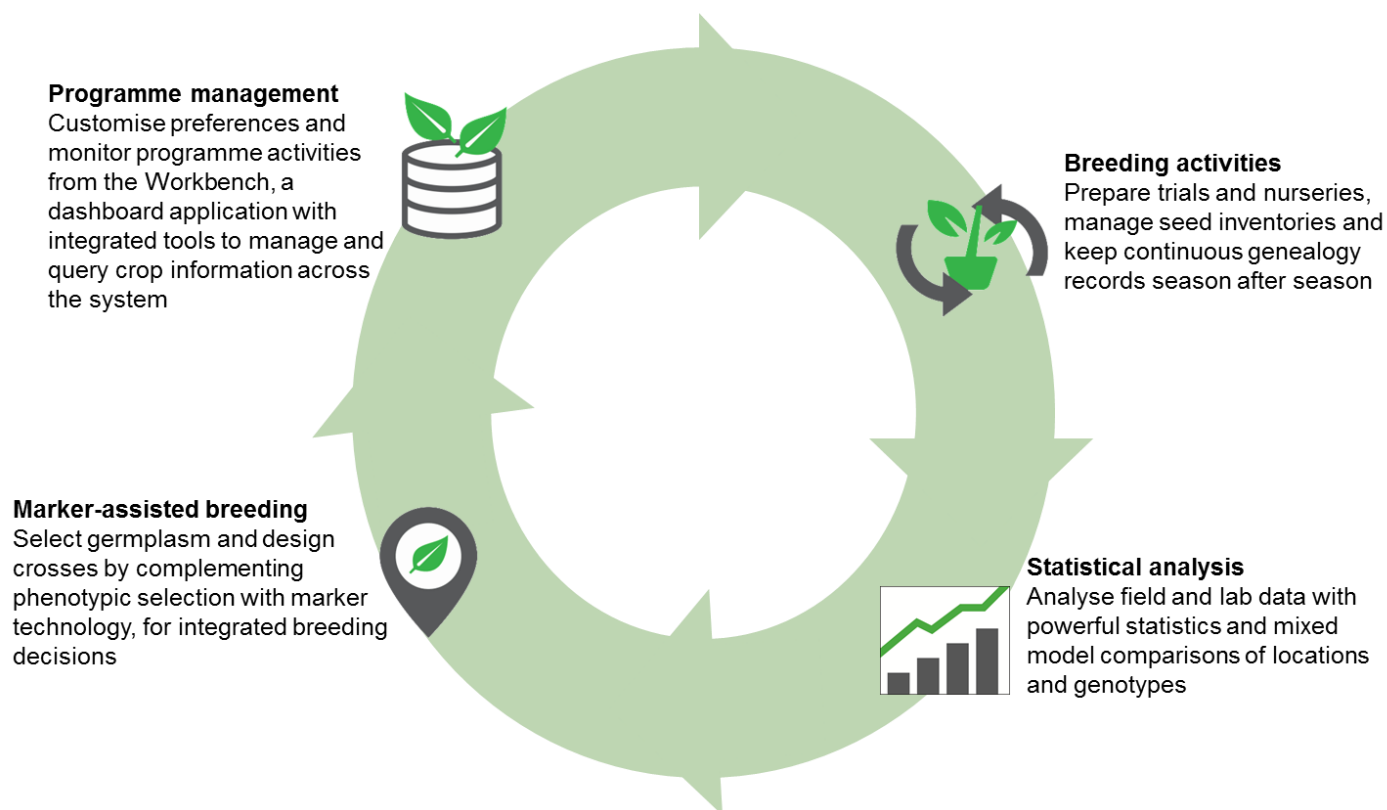


# Breeding Management System (BMS)

## Fact Sheet

From the Integrated Breeding Platform suite of tools and services

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:



System requirements	Support services and resources
<p>The BMS is compatible with MS Windows</p> <p><b>Hardware</b> 4GB RAM 1Ghz Dual-core Processor 250GB Hard Drive</p> <p><b>Software</b> Windows XP SP3 or newer Browsers Supported: IE v. 9, 10, 11; Chrome (latest), Firefox (latest)</p>	<p><b>IBP experts support clients at every step of the implementation process to facilitate adoption:</b></p> <ul style="list-style-type: none"> <li>→ Collaborative needs assessment, customisation and implementation planning</li> <li>→ Installation, data migration and continuing technical support</li> <li>→ Training activities and material</li> <li>→ Professional support for breeding plan development, data analysis, genotyping and breeding decision support</li> <li>→ Access to other useful products online: interactive maps, diagnostic markers and germplasm, trait dictionaries and genotyping service providers</li> </ul>



[www.integratedbreeding.net](http://www.integratedbreeding.net)  
*Today's tools for tomorrow's crops*

An initiative of the CGIAR  
Generation Challenge  
Programme (GCP)



# Breeding Management System (BMS)

## Key components



### Programme and information management

- 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.



### Breeding activities—Interconnected fieldbook applications to:

- 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

- 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.



### Marker-assisted breeding

- 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.

The screenshot shows the BMS Workbench dashboard. At the top, there's a navigation bar with 'HOME', 'SIGNOUT', 'TOOL VERSIONS', and 'HELP'. Below that, the 'DASHBOARD' section has a 'PROGRAMS' list with columns for 'PROGRAM NAME' and 'CROP'. Programs listed include 'Maize Tutorial', 'Bean TL1', 'Wheat Genebank', 'Rice SEASBN', 'Maize iMAS', 'Test 55', and 'MD94'. To the right, there's a 'Lists' section with a tree view showing 'Program Studies' and 'Nurseries & Trials'. Below the dashboard is a 'PROGRAM SUMMARY ALL [4]' table with columns for NAME, TITLE, OBJECTIVE, START DATE, END DATE, PRINCIPAL INVESTIGATOR, SITE NAME, and STUDY TYPE.

NAME	TITLE	OBJECTIVE	START DATE	END DATE	PRINCIPAL INVESTIGATOR	SITE NAME	STUDY TYPE
Trial457.3	UCR2011 Trials	Germplasm evaluation	2014-01-03	2014-01-03	ATLIN GARY		Trial
UCR2010F1	EARLY-F1	EARLY-F1	2012-09-03	2012-09-03	MCLAREN CHRISTOPHER	CIMMYT HARARE	Nursery
UCR2010F2	EARLY-F1	EARLY-F1	2012-09-03	2012-09-03	MCLAREN CHRISTOPHER	CIMMYT HARARE	Nursery
UCR2011T1	UCR2011 Trials	Germplasm evaluation	2014-01-03	2014-01-03	MCLAREN CHRISTOPHER	CIMMYT HARARE	Trial

Quick View of the BMS Workbench

“ 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 ”

## Integrated Breeding Platform (IBP)

The Integrated Breeding Platform (IBP) is a web-based solution for crop breeders, where registered users can access purpose-built tools to manage their plant breeding programmes, obtain support and professional services, find new knowledge, access training resources and discuss pertinent issues with their peers in various communities of practice.

## Breeding Management System (BMS)

The centre-piece of the IBP is the Breeding Management System (BMS) – a suite of interconnected breeding software tools and related databases specifically designed to help breeders with project planning, data management, statistical analysis and decision-making in their integrated plant breeding programmes.

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