



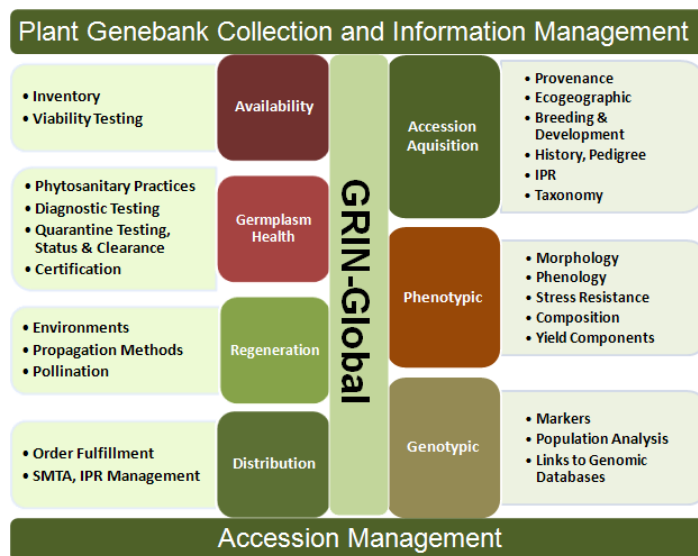
# International Project to Develop a Global Plant Genebank and Information Management System

## Summary

The GRIN-Global Project is creating a new version of the Germplasm Resource Information System (GRIN), providing the world's crop genebanks with a powerful, but easy-to-use plant genetic resource (PGR) information management system.

Programming strategies support continuous evaluation and refinement; advanced prototypes will be extensively beta-tested. The project team will identify barriers to adoption and evaluate the system during and following implementation.

Bioversity International will deploy GRIN-Global worldwide, working cooperatively with users to document the system in Arabic, English, French, Russian and Spanish, translate its interface, and implement it in developing countries.



The system uses a .NET ("dot net") framework and Visual Studio development environment. This technology allows data to be stored locally or on networks. Centralized data can be distributed to off-site systems. GRIN-Global accommodates commercial and open-source programming tools and requires no licensing fees.

## GRIN and the Need for GRIN-Global

The USDA-ARS developed, supported, and enhanced GRIN throughout its 22 year history. Widely recognized as a superior genebank management system, GRIN information content has been invaluable to researchers and genebank personnel, but its inherent complexity and licensing fees prevented some genebanks from adopting it.

Many national genebanks lack access to high quality information technology resources needed to manage their collections. Consequently, the Global Crop Diversity Trust initiated the GRIN-Global project to meet their common needs and reduce redundancies of effort being expended by the genebanks and independent consortia.

## A \$2.3 M Project Partnership

GRIN-Global is being developed jointly by the **USDA Agricultural Research Service**, **Bioversity International**, and the **Global Crop Diversity Trust**.

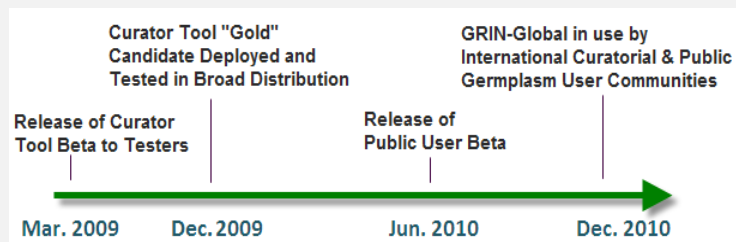


**USDA-ARS** provides an enhanced GRIN database schema and a core set of web services and technologies for updating data stored on a centralized system and for distributing the data to existing, off-site systems.

**Bioversity International** supports deployment of GRIN-Global internationally, through regional PGR networks, its Regional Offices and the System-wide Genetic Resources Programme, working to identify cooperators to document GRIN-Global in other languages and implement it in developing countries.

**The Global Crop Diversity Trust** provides a \$1.4 million grant for GRIN-Global's development and its international deployment to support effective PGR conservation and international genebank information management needs.

## GRIN-Global Project Timeline



## Project Team

Core development team personnel are from:

- Plant Introduction Research Unit, Ames
- Database Management Unit, Beltsville
- National Clonal Germplasm Repository, Corvallis
- Subtropical Horticultural Research Station, Miami
- Bioversity International, Rome

## Design of the GRIN-Global System

GRIN-Global is built using the well established three-tier (Presentation, Business, and Data) architecture design.

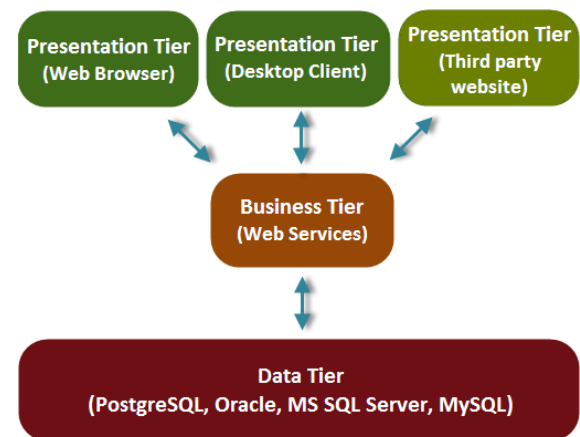
**Presentation** - can assume different forms. For example, the GRIN-Global website retrieves PGR data from the database using the Business Tier's web services. Similarly, the GRIN-Global Curator Tool, a desktop .NET application, uses the same web services to retrieve data.

- third-party applications, such as MaizeGDB or SoyBase, or websites connecting to the Business Tier web services, can retrieve data

**Business** - contains a full complement of software modules

- accessible to any computer connected to the internet via standard protocols
- current web services use the SOAP protocol, providing data in XML format

**Data** - database where PGR data is permanently stored



## Advantages

GRIN-Global will be:

- continually maintained and updated
- customizable to meet local system administrator requirements
- capable of data exporting & importing between spreadsheets and GRIN-Global's database
- including customizable screen views, forms, and menus and a search engine that is "Google-like"

## ...for Genebank Use

Can be implemented different ways, ranging from a simple genebank inventory application to a widely distributed system supporting on-line user searching and germplasm ordering

- Operates over a network or on "stand-alone" personal computers
- Supports PostgreSQL, MS SQL Server, Oracle, and MySQL databases
- Enables maximum flexibility in delegating user rights
- Provides interfaces in Arabic, English, French, Russian and Spanish

## ...for Researchers

Provides immediate access to PGR information for researchers

- Incorporates an easy-to-use interface for extracting and manipulating PGR information
- Facilitates germplasm ordering to meet specific research needs
- Meets other databases' interoperability requirements

## Additional Information

For more information, visit the WikiSite <http://www.grin-global.org>

To provide input, visit <http://www.grin-global.org/forums/>