



# ICARDA Generation GLIMS and GeMS

ICARDA Generation Genomics Laboratory Information Management System and Gene Management System

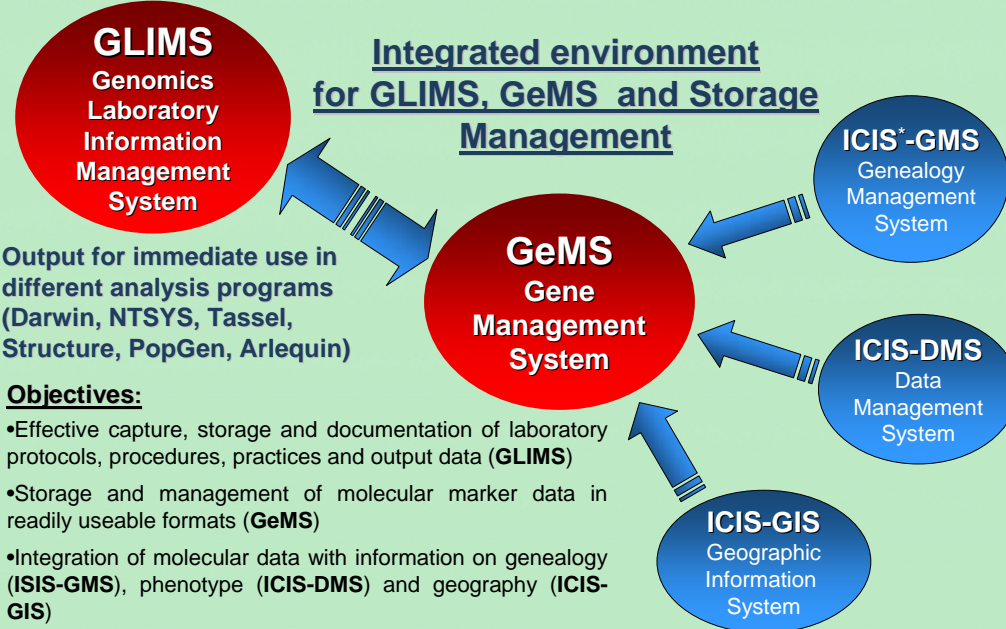
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## Introduction

With the large amount of molecular data generated through the commissioned research of the Generation Challenge Program (GCP), it becomes imperative to provide tools to the researchers to store, organize and analyze the data and thus support decisions by stakeholders. Integrating molecular and phenotypic data is a step towards novel gene discovery for the development of new crop varieties with better adaptation to biotic and abiotic stresses and improved yield capacities.



Output for immediate use in different analysis programs (Darwin, NTSYS, Tassel, Structure, PopGen, Arlequin)

## Objectives:

- Effective capture, storage and documentation of laboratory protocols, procedures, practices and output data (GLIMS)
- Storage and management of molecular marker data in readily useable formats (GeMS)
- Integration of molecular data with information on genealogy (ICIS-GMS), phenotype (ICIS-DMS) and geography (ICIS-GIS)
- Creation of a searchable WEB based user friendly interface to enhance allele mining

\*ICIS = International Crop Information System  
Collaborative initiative of the CGIAR centers

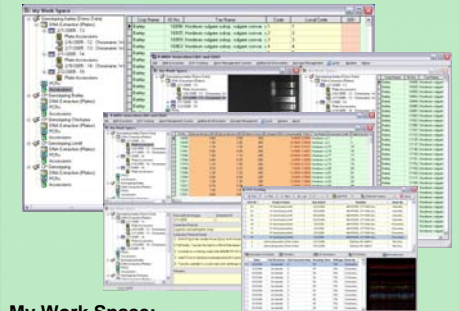
## Achievements:

- Generation of a program integrating GLIMS, GeMS and Storage management
- Uploading of all ICARDA lab procedures into GLIMS
- Uploading of information on primers, accessions and genotype data of the commissioned genotyping projects (GCP) in barley, lentil and chickpea carried out at ICARDA



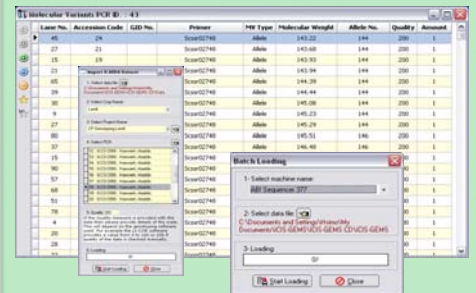
## Web base interface:

The GeMS can be searched via an internet browser



## My Work Space:

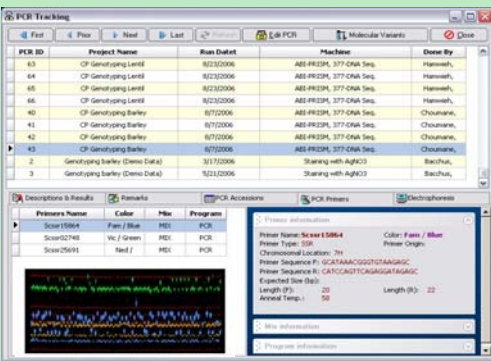
A clear interface for information management: project information, accessions, DNA extraction (plates), gel images, PCRs and molecular variants



## Batch loading and import services:

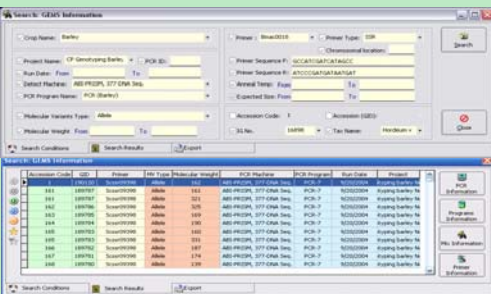
The batch input program saves time and secures high accuracy for data entry by importing the information directly from the sequencer

## User-friendly program for storing and managing laboratory procedures and molecular marker data in a uniform format for easy exchange of information



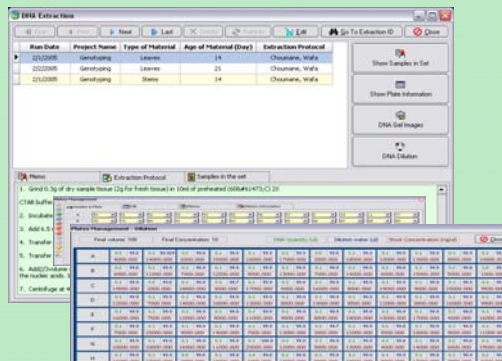
## PCR Tracking:

Managing the information of accessions, primers, programs, mixes and PCR conditions



## Search, browse and share:

GeMS allows to search for a range of different parameters, to display the search results and export them in different formats (GCP format)



## DNA Extraction:

Protocols, quantification, gel images, accession information, DNA dilutions (calculated by the program based on stem and final DNA concentrations)

## What next?

- Developing an interface for retrieving data from ICIS-DMS (phenotype data), ICIS-GMS (genealogy) and ICIS-GIS
- Developing a database for storing results of QTL analyses and association mapping for integrating data across different populations and studies
- Microsatellite finder and primer designer: fully integrated with ICARDA GLIMS & GeMS

More information and details available on:

<http://www.icarda.org/GenerationCP/igglimsgems/>

