

Maize Diversity: Accessing Data behind Germplasm, QTL, and Breeding Studies



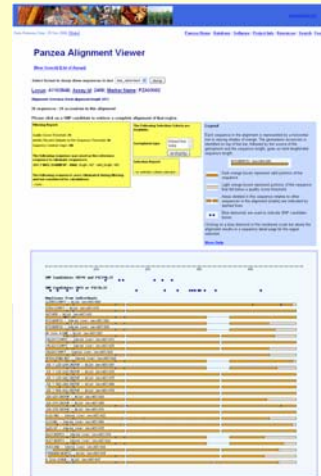
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Introduction

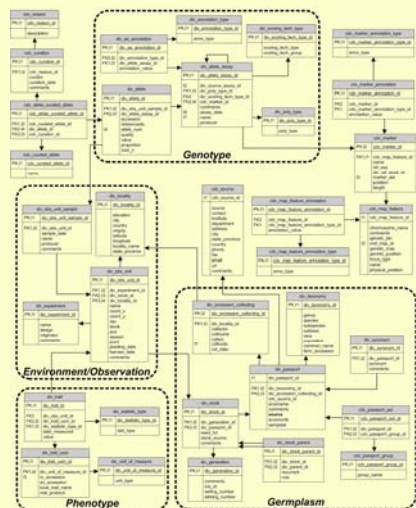
We have developed Panzea, a public website dedicated to making maize diversity data available to the community. The infrastructure of Panzea includes the Genomic Diversity and Phenotype Data Model (GDPDM) database schema (sourceforge.net/projects/gdpdm); the Genomic Diversity and Phenotype Connection (GDPC), a Java middleware and advanced search tool for the desktop (sourceforge.net/projects/gdpc); and various Internet-based programs including a geographical viewer, sequence alignment-SNP viewer, germplasm/molecular searches, etc. (www.panzea.org). The GDPDM database schema is used to organize collections of genetic and phenotypic data. The GDPC middleware provides a highly-flexible advanced search tool to retrieve, integrate, and display customized data sets. TASSEL, a genetic association and diversity analysis tool (www.maizegenetics.net/tassel, sourceforge.net/projects/tassel) is another desktop program written in Java that uses the GDPC middleware to acquire data for analysis. All these components are free, open-source tools and can be used by other crop species (i.e. wheat, rice).

Geographical Viewer, Sequence Alignment-SNP Viewer, etc. www.panzea.org, and www.gramene.org



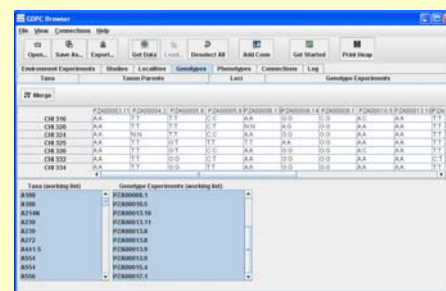
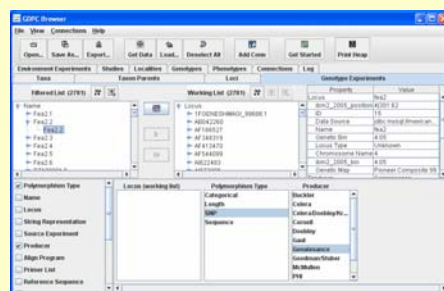
GDPDM Schema

www.maizegenetics.net/gdpdm



GDPC Browser

www.maizegenetics.net/gdpc



Summary of Data in Panzea

Genotypic Data:

	Plants	Markers	Data points
SSR	1546	520	406114
SNP	462	6145	4694052
Sequencing	243	4784	92674
INDEL	79	8	26126
CAPS	77	5	10644

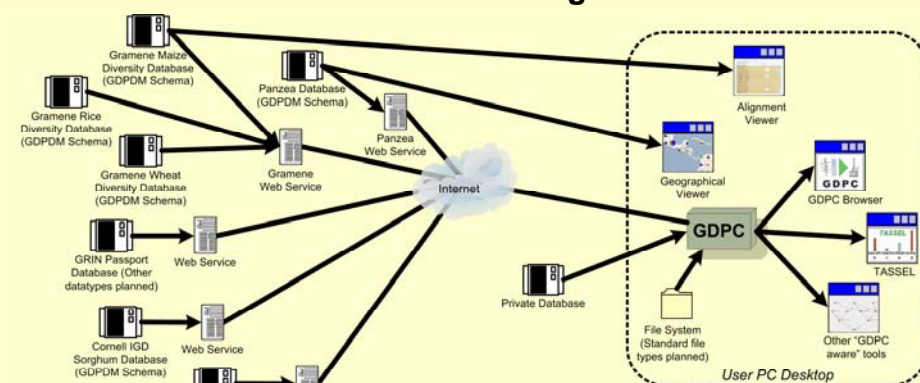
Germplasm Records:

Maize Hybrid	296
Maize Inbred	504
Maize Land Races	1620
Teosinte	473
Teosinte inbred	23
Tripsacum	29

Phenotypic Data:

Traits	56
Data points	34239

Infrastructure Diagram



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