INTRODUCTION

The Generation Challenge Programme (GCP) was initiated in 2004, as a ten year programme by the Consultative Group on International Agricultural Research (CGIAR). Its mission is to use plant genetic diversity, advanced genomic science and comparative biology to develop tools and technologies that help plant breeders in the developing world produce better crop varieties for resource-poor farmers by the application of modern breeding techniques.

The research, performed in many places, generates large amounts of information. The way this information is managed, analyzed and made accessible determines to a large extent its value. The way the data can be analyzed depends in turn on the way analysis tools and other information resources are made available.

A large component of the GCP, subprogram 4 (SP4), focuses on bioinformatics and biometrics, and aims to create a network for the integration of research information on genetic resources, genomics and crop improvement. SP4 addresses methodologies for linking gene discovery with genetic resource characterization and crop evaluation data. On this poster an overview of products, software and services developed and/or provided by SP4 is presented.

GCP SP4 BIOINFORMATICS PRODUCTS

GCP SP4 provides freely accessible, ready to use software and services, such as those provided by its worldwide high performance computing grid. These products are intended for scientists working on genomics, breeding and statistical analysis. The thematic areas of interest for the GCP encompass three categories:

- The first, access to high quality data, focuses on data availability via web services and a Central Registry and on data quality (DQ). DQ encompasses quality assurance, management and standardization. DQ assurance gives special attention to DQ of passport and marker data. DQ standards for research data receive high attention of GCP and are currently in development. Standardization goes into detail on templates and ontology. The GCP has developed a special new ontology for different food crops*.
  Standardized, approved data templates are provided by the GCP, applicable to different types of crop research, breeding experiments and crops. They serve to capture research data in a coherent way throughout the consortium.

- The second category encompasses analytical tools and facilities. The tools provide software packages, either newly developed or adapted, for genomics, diversity studies, breeding and statistical analysis. Examples are Dayhoff, a comparative plant stress gene catalogue, and DARwin, a windows program for dissimilarity analysis and representation. Crop databases with passport and phenotypic data are available for wheat and rice. Facilities encompass a section more interesting for informatics developers** – networking, domain modeling, software architecture and crop database architecture.

- Finally, support to GCP scientists is provided by helpdesks, courses and training materials. Detailed information on workshops and meetings organized by GCP over the past five years is made publicly available.

*) poster R Shresta, TDWG 2009
**) presentation M Ruiz, TDWG 2009

The GCP SP4 bioinformatics products are accessible via the bioinformatics portal pages, http://www.generationcp.org/bioinformatics.php