International Center for Agricultural Research in the Dry Areas (ICARDA)

ICARDA

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INSTITUTE OF PLANT BREEDING,
SEED SCIENCE AND POPULATION GENETICS
Chair of Plant Breeding

PPB-ase:

A user-friendly database for Participatory Plant Breeding programs

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Figure 1: Farmers in Syria during selection of a PPB-trial ; Source: own

1 Introduction

In a decentralized and participatory plant breeding (PPB) program farmers select from a large number of genotypes over a number of cycles in several locations. In PPB-programs selection is based on location-specific adaptation. Having, for example, four stages of selection generates large and unbalanced data sets.

2 Objectives

Extracting all the information from these data sets is particularly difficult with common spreadsheet software, especially for data which is related to genotype x environment (GxE) interactions. Therefore, there is need for an information system that makes it as easy as possible to retrieve and compare data over all given factors (e.g. location, year, farmer's selection) in the PPB-program. The current databases are not only complex to manage, but costly, as they use none open source software, limiting their use in developing countries.

Figure 2: Map of PPB-program Syria 2010 ; Source: ICARDA

3 Methods

We are presently creating a simple, free and user-friendly database that will allow to store, retrieve and analyze plant breeding data. The database is implemented using the Java based HyperSQL Database Engine (HSQLDB) in the package of Open Office[3] with links to the input formats of Genstat[®4] and GGEbiPlot[®5].

4 Goals

The proposed database will be designed to be capable of managing the following data in a PPB-program for barley:

- trial data for any trial or field design
- field data for any given trait
- results from statistical analyses
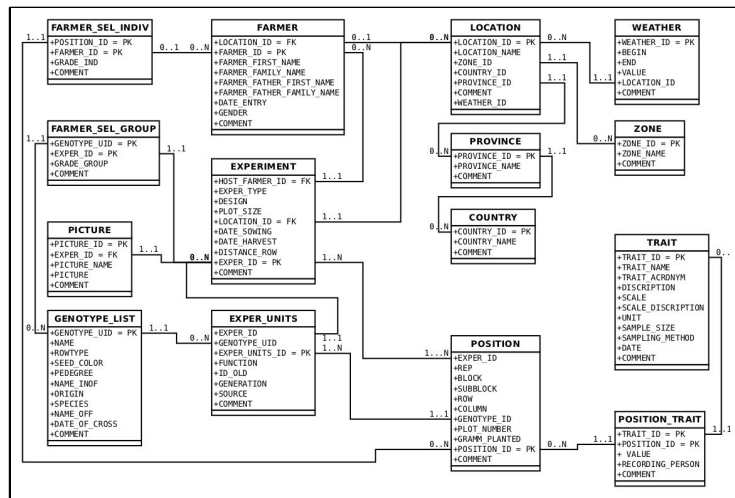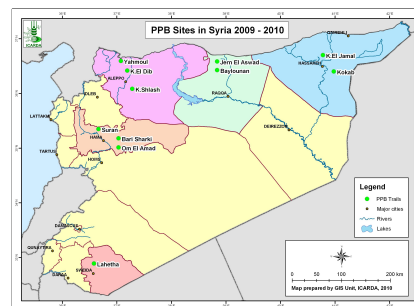- farmers selection individually or in groups

Figure 3: Entity-relationship-diagram of the Database ; Created with dia 0.97.1

References

[1] Institute of Plant Breeding, Seed Science and Population Genetics, University of Hohenheim, 70593 Stuttgart, Germany
[2] International Centre for Agricultural Research in the Dry Areas (ICARDA), P.O. Box 5466, Aleppo, Syrian Arab Republic
[3] OpenOffice.org 3.1.1
[4] GenStat® , VSN International, www.vsni.co.uk/genstat
[5] http://www.ggebiplot.com