Information system for a wheat breeding program

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The information system has to satisfy the demand of a research group:

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeders, scientists, assistants</td>
<td>40-50</td>
</tr>
<tr>
<td>Number of crop species</td>
<td>12 (self pollinated)</td>
</tr>
<tr>
<td>Field experiments</td>
<td>50-60 ha</td>
</tr>
<tr>
<td>Trial sites</td>
<td>6-8</td>
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<tr>
<td>Laboratories</td>
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</table>
### Amount of data to be handled (per year)

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Amount</th>
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<td>Trial related data</td>
<td>1,800,000</td>
<td>renewable</td>
</tr>
<tr>
<td>Pedigre related data</td>
<td>1,500,000</td>
<td>accumulative</td>
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<tr>
<td>Seed exchange data</td>
<td>500,000</td>
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</tr>
<tr>
<td>Genebank data</td>
<td>200,000</td>
<td>accumulative</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>4,000,000</strong></td>
<td><strong>data</strong></td>
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</table>
Identification of a trial unit

Location + Trial name + Plot number + Subplot number

Entry within trial (Replicated trial)
Plot (Unreplicated trial)
Population (F2)
Family (F3)

Row no. within family
Replication number
Why data modelling?

- Data1999
- Data2000
- Data2001
- Data2002
- Data2003
- Data2004
- Data2005
- Data2006

- BASA/DF333
- M374/SX/2897/PRSK

- total: 3778

- 312 times
- 492 times
- 231 times
- 177 times
Species
Growth habit
Pedigree ID
Line ID
Line Code
Variety name
Abrev. of variety name
Country of origin
Breeding institute
Registration year
Year of cancellation
Breeding Network

30-40 PC-s may joyn and modify the same DBs simultaneously

- Selection
- Weighing
- Plot numbering
- Laboratory
- Statistics

Adat2007

Breeding Breeding Network

Network
Program moduls I.

Selection
Crossing
Plot numbering (trial layout)
Seed dispatch
Seed arrival
Addresses
Crossing

![Image of a computer screenshot showing a breeding software interface with data on crosses and pedigrees. The interface includes tables with columns for names, crosses, and pedigrees, along with other relevant information.]
Selection

![Image of Breeder software interface]

### Selection Table

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<th>Pt</th>
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### Additional Information

- **From**: Adat2007
- **To**: Adat2008
- **Crop Species**: 'ALL'
- **New Experiment**: Yes
- **Attach to Code**: N
- **Sisters**: Yes
- **Weight = Sum of...**: Yes
- **Weight limit (kg)**: 0.006
- **Site**: MV
- **No of Lines**: No
- **Variable**: No
- **Conform**: Yes
- **Plot Now**: No

**52 Records / 5 Selected

**23 Records**

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```

*Date: 2007.10.16. 13:24*
Program moduls II.

Manual data input
Data import from files
Harvest Master link
NIR/NIT link
Alveograph/Farinograph link
Digital balance link
Data collection

Automatic (barcode)
- Infratec® 1241
- Inframatic® 8611
- Mettler digital balances

Using a software interface (barcode)
- SKCS 4100
- Alveograph and Alveolink
- Farinograph

Manual
- Glutomatic

Polycorder
Minolta CR-300
Falling Number 1500
Farinograph E
Texture Analyser
HPLC
Glutomatic
Program moduls III.

Bar code design and print
Using barcodes in the system

1. Design
2. Printing
3. Using
Program moduls III.
Statistical modul
Program moduls IV.

Field books and sowing lists
1. Sowing list types

2. Field book types
Localization of genotypes in the system
Comparision with other systems

Breeder friendly:
- follows the logics and steps of the breeding process
- has tool for many activities
- easy to learn and use
- support team work

Flexible:
- activities can be quitted and continued any time
- final trial size and layout can be fixed when most of the genotypes have already been selected

Easy data collection and handling:
- most of data collection is online (minimize data collection errors)
- all data (observed or measured) ever recorded can be easily utilized within year or over years

Strong in pedigree management:
- automatic ID generation for new pedigrees and sister lines
- links to the Genebank

Information exchange within the system:
- real time information (monitoring)
Thank you for your kind attention