WorldwidE Electronic Database for MApping Plants

A geodatabase for recording data on weed distribution

Kateřina Hamouzová, Michaela Kolářová, Josef Soukup & Pavel Hamouz
Purpose

– designed for the collection of weed/plant occurrence data
– should provide information on the distribution of weeds
– relate community composition to known variation in the environment (canonical analysis)
– analyze temporal and spatial changes in the weed flora
Background

– Global covering ability (Google maps)
– DB could serve advisers, researchers, stakeholders, industry ....

• Maintained by Department of Agroecology and Biometeorology
WeedMap

• **Accessible on-line:** [www.weedmap.eu](http://www.weedmap.eu)

• **Public section:**
  - dedicated to all people interested in geographical distribution of weeds/plants
  - allows displaying the collected data in maps of weed/plants distribution

• **Secured (scientific) section**
  - designated for scientific workers
  - available for registered users only
  - allows inserting, viewing, searching and exporting data
  - sharing data on-line (based on Document Management System)

Herbicide Resistance Working Group, Frankfurt, Germany 19 - 20 May, 2014
Structure of WeedMap database

Main page

Secured section

List of data sets

Set of relevés

Relevé

Header data

Species data

Searching tool

Public section (maps)

Resistant population

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Relevé

Winter wheat – April 2014

• listing each species cover-abundance values and the measured environmental variables
# Cover scale (conversion table)

<table>
<thead>
<tr>
<th>Description</th>
<th>Braun-Blanquet (basic)</th>
<th>Braun-Blanquet (extended)</th>
<th>Percent</th>
<th>Ordinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single ind., small cover</td>
<td>r</td>
<td>r</td>
<td>0.02</td>
<td>1</td>
</tr>
<tr>
<td>Few ind., small cover</td>
<td>+</td>
<td>+</td>
<td>0.1</td>
<td>2</td>
</tr>
<tr>
<td>Many ind., cover &lt; 5%</td>
<td>1</td>
<td>1</td>
<td>2.5</td>
<td>3</td>
</tr>
<tr>
<td>Cover 5 - 25%</td>
<td>2</td>
<td>2m</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2a</td>
<td>8.75</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2b</td>
<td>18.75</td>
<td>6</td>
</tr>
<tr>
<td>Cover 25 – 50%</td>
<td>3</td>
<td>3</td>
<td>37.5</td>
<td>7</td>
</tr>
<tr>
<td>Cover 50 – 75%</td>
<td>4</td>
<td>4</td>
<td>62.5</td>
<td>8</td>
</tr>
<tr>
<td>Cover &gt; 75%</td>
<td>5</td>
<td>5</td>
<td>87.5</td>
<td>9</td>
</tr>
</tbody>
</table>
Levels of access rights

1. **Administrator**
   - ✓ management of all data *(inserting, editing, deleting)*
   - ✓ management of access accounts

2. **Scientific user**
   - ✓ viewing and searching for all data *(relevés)*
   - ✓ management of his own data
   - ✓ export upon consent of authors only

3. **Free access for public** - maps only
Import and export

- **import**
  - ✓ turboveg, XLS
  - ✓ species data only

- **export**
  - ✓ XML, CSV
  - ✓ subject to the consent of authors, consenting process will be controlled by a software utility
This application was designed for the collection of data on weed occurrence on agricultural and non-agricultural land. The public section of the database allows inserting, searching and displaying the collected data in well-arranged maps of weed distribution. For inserting data by public users, only simple registration is necessary. Secured section of the database is available for registered scientific users only. It allows entering, viewing and exporting data in form of phytocoenological relevés.

Search species
Analyze species distribution
Add new record

Contact
Department of Agroecology and Biometeorology, Faculty of Agrobiology, Food and Natural Resources, Czech University of Life Sciences in Prague, e-mail: weedmap@weedmap.eu
Public section

- inserting species records without authorized access
- search species

✓ searching and viewing all data or scientific data only
✓ data are localized on the map, in a selected region
✓ mapzoom is limited
✓ different color of points based on average species coverage
Scientific section

Registered users: 2 sub-sections:
- **My records** – inserted records by authorized person(s) (scientist), options edit or delete own data
- **All records** – all inserted records in the database from all authorized persons

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Scientific section – Data Inserting

• **Insert new records:**
  – Add new relevé
  – Add occurrence of single species
  – Add resistant population

• **Edit record**

• **Delete record**
<table>
<thead>
<tr>
<th>Field Relevé Number</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>Forecrop</td>
</tr>
<tr>
<td>Latitude</td>
<td>Crop</td>
</tr>
<tr>
<td>Longitude</td>
<td>Crop Growth Stage (BBCH)</td>
</tr>
<tr>
<td>Country</td>
<td>Crop cover (%)</td>
</tr>
<tr>
<td>Province</td>
<td>Herbicide</td>
</tr>
<tr>
<td>County</td>
<td>Farming system (organic, conventional)</td>
</tr>
<tr>
<td>Locality</td>
<td>Soil Type</td>
</tr>
<tr>
<td>Altitude</td>
<td>Geology</td>
</tr>
<tr>
<td>Date</td>
<td>Biblioreference</td>
</tr>
<tr>
<td>Site type (arable land, non-arable land)</td>
<td>No. Table in Publication</td>
</tr>
<tr>
<td>Site type description</td>
<td>No. In ref. Table</td>
</tr>
<tr>
<td>Relevé area (m²)</td>
<td>Remarks</td>
</tr>
<tr>
<td>Scale (BBS, BBE, ...)</td>
<td></td>
</tr>
<tr>
<td>Total weed cover (%)</td>
<td></td>
</tr>
</tbody>
</table>
Plant nomenclature

- adopted from EPPO database
- includes about 15,000 plant species
- many synonyms also included (one name preferred only)
- with EPPO (Bayer) code system
Scientific section – Data Inserting

Add new relevé
- compulsory x
optional items
- inserting species of weed and
species coverage is through the link in the table
Add occurrence of single species

Items in the species section are:

- Species (rare, endangered),
- Cover,
- Number of individuals,
- Economic/environmental importance
Add resistant population

Items in the resistant section are:
- Active ingredient,
- Mode of action,
- Mechanism/s of resistance,
- Testing methods,
- ...
Export

Selected populations resistant to chlorsulfuron on map

XML file for GIS applications
Scientific section - maps

3 types of maps:

1) species distribution based on species frequency
2) species distribution based on average species coverage
3) point – map with localized relevés in the different colors
Application of data stored in WeedMap

• Description of weed-environment relationships is often poorly met
  – use of cover-abundance ratings allows to identify associations among site properties and weed species together with field history

• Predicting the distribution of species
  – Rare & endangered plants
  – Resistant weeds
Application of data stored in WeedMap

- Extent and frequency of herbicide resistance is rather limited and difficult to estimate
  - samples collected non-randomly
  - DB contains both susceptible & resistant populations
- Early detection of herbicide resistant species
  - Natural conditions (field)
  - Herbicide history
  - Proactive herbicide resistance management adoption
Test WeedMap database

- Go to: www.weedmap.eu
- NAME: Scientist
- PASSWORD: Frankfurt
- Registration as scientific user
Your comments and suggestions are welcome and will assist us in continuously improving our database!