CHARACTERIZATION OF HONEY SOURCES BY GEOGRAPHICAL INFORMATION SYSTEM

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The characterization of honey sources is a valuable tool to exploit more rationally the potential of an area and to improve honey production in terms of quantity and quality. Under the Italian research project "Integration of bee knowledge through the development and calibration of a model for the simulation of the beehive" a methodology based on Geographical Information System (GIS) techniques for identifying and georeferencing bee plants on the area around the experimental apiary of Di.Va.P.R.A. situated in Grugliasco (Turin, Piedmont, Italy) was developed.

METHODOLOGY

1. Identification and retrieval of map data necessary to describe the operational context:

- Regional Technical Map (CTR) 1:10.000, Piemonte Region (1992);
- Google Earth satellite image screenshots (2007)
- IPLA (Institute for Wood Plants and Environment) land use map (YFT) from Piemonte Region

2. Data reference system implementation: all the data were referenced to the WGS-84 UTM 32N projection
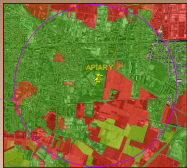
3. Delimitation of the study area by defining a 1.5 km radius circle (optimal bee flight radius) centered on the experimental apiary using ESRI ArcGis9.1 editing tools

4. Google Earth images are interpreted to update the CTR and IPLA maps content through editing operations inside the GIS

Geometric updating: missing features at the ground are edited on the basis of field survey (by mobile GIS) and Google Earth image interpretation

Semantic updating: assignment of attributes (vegetal component) through field observations:
- trees (point): genus, species, apicultural interest (YES/NO)
- crop field (polygon): genus, species, apicultural interest (YES/NO)

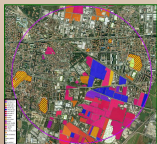5. Data analysis and summary statement
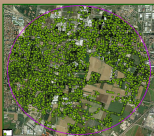
RESULTS

Trimble GeoExplorer equipped with ArcPad 7.1

THEMATIC MAPS

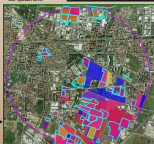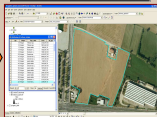General map of land use: farming areas are mostly concentrated in the SE quadrant.

Crops of apicultural interest (cyan selected)

Building and paved areas are not used for honey bees

Many trees grow in the area; they are more abundant in the urbanized part and represent an important resource for honey bees

HONEY YIELD can be derived by calculation multiplying the attribute field "area" (ha) of each polygon for the honey potential (kg/ha) from literature
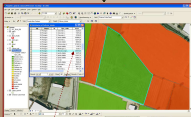
Canola honey yield calculation

| 2,92 ha | × | 50 kg/ha |

146 kg