
Voluntary and incentive programmes for land management and soil protection in Croatia

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Key issues

- voluntary-based incentive programmes are mostly applied on the regional - **"county"** level;
- The majority of these programmes deals with **farm management** including elements of **agricultural environmental management**;
- Some of them are initiated to recommend the best management practice when the specific threats, constraints or restrictions in use are marked:
 - Erosion
 - Contamination
 - Salinization
 - River basins and protected nature

Project: **Agricultural production enhancement and controlling
in Zagreb County (Croatia)**

Financed by: THE ADMINISTRATIVE DEPARTMENT FOR
AGRICULTURE AND FORESTRY OF **THE COUNTY
OF ZAGREB**



- Zagreb County
- total area: 370.168 ha
- population: 1.083.841 inhabitants
- land use
 - **agriculture** **200.000 ha**
 - forests 150.000 ha
 - other 21.463 ha

Project scopes

- The general aim of the project is to establish a regional system of agricultural production enhancement and control that would help farmers to fulfill the cross-compliance requirements and to get the GLOBALGAP certification;
 - monitoring is carried out on the parcel level and only on the parcels included in agricultural subsidy system;
 - spatial databases on the parcels and land included in the project are developed, history records provided as well as recommendations to enhance the productivity;
 - simulation of economical indicators for the future production included in the project;
 - all data included into an unique GIS application that would provide all relevant information about the current agricultural land management in the Zagreb County;
- Creation “the history of producing area” would allow the provision of the certain **quality certificate**, e.g. GLOBALGAP certificate;

Project information

- 5 years duration of the project, stakeholders' accession is voluntry;
- The project is based on the system of financial support that helps farmers operate **environmentally sound** and **economically viable business**
- Program activites focused on:
 - farm management
 - spatially related information
 - assessment of environmetal concerns associated with the farming operations

» stakeholders mostly fruit and grape/wine producers



- ▶ a short questionnaire survey carried out
 - about current farm activities
 - farmer's future plans
- ▶ Soil and plant tissue testing provided
- ▶ Nutrient management is a very important issue for farmers and fertilisation recommendations were given
- ▶ education for farmers provided by regular meetings and field visits

Ime i prezime proizvođača: _____

Adresa: _____

Broj telefona: _____ mobitel: _____

e - mail: _____

1. Površina parcele pod uzgojem povrća ? _____

2. Koje vrste povrća uzgajate? _____

3. Kje sorte najčesče uzgajate? (ispuni tablico 1)

Tablica 1.

Vrsta povrća	Sorta
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4. Povrće uzgajate?

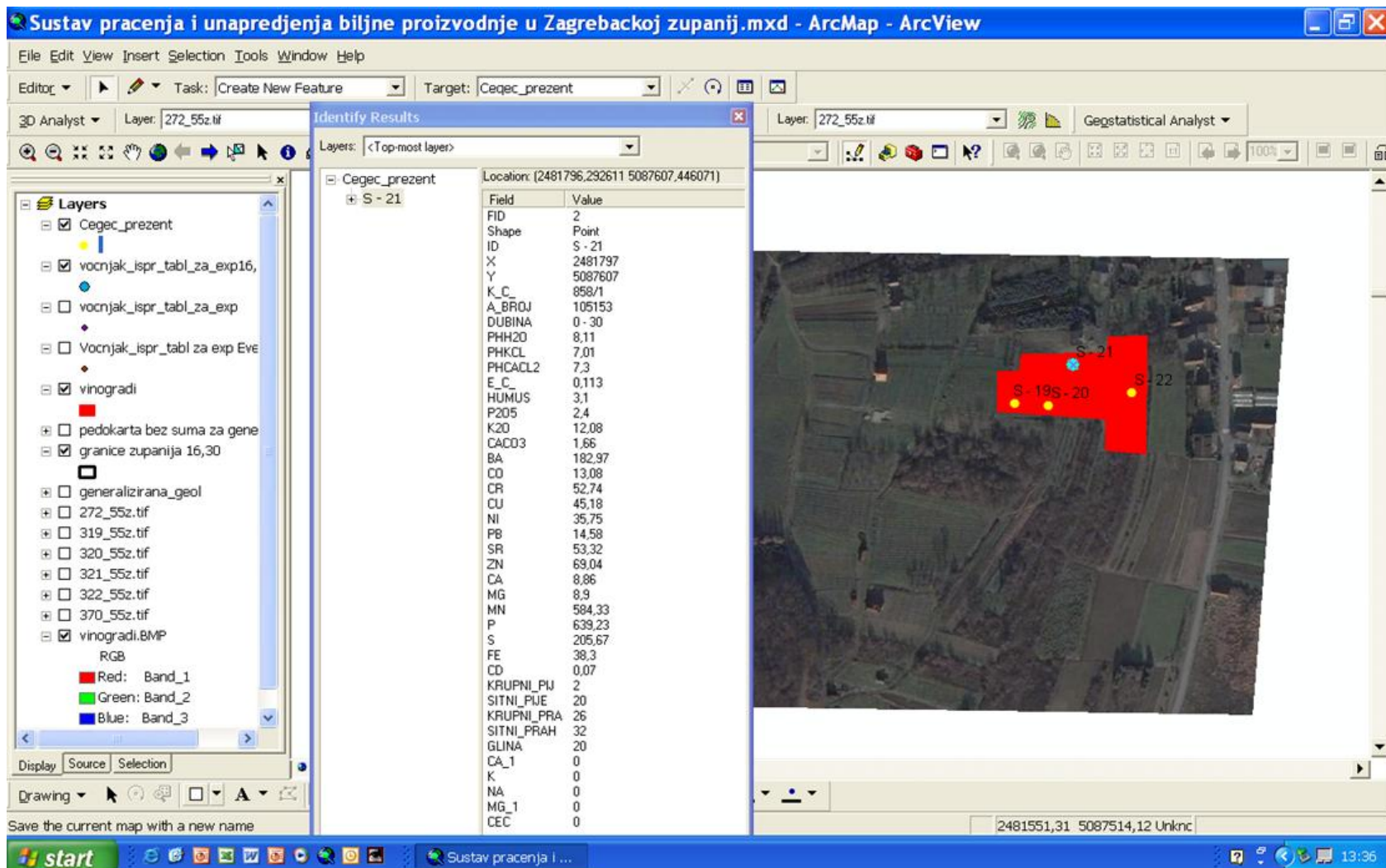
- a) izravnom sjetvom
b) iz presadnica, pogledati pitanje br.5

5. Koristite presadnice?

- a) iz vlastite proizvodnje
- b) nabavljate od specijaliziranog proizvođača presadnica

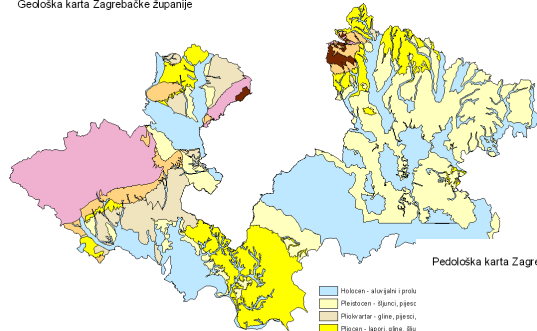
6. Povrće uzgajate

- a) na golom tlu
b) na malčiranom tlu, navesti vrstu malča _____
c) pod agrotekstilom

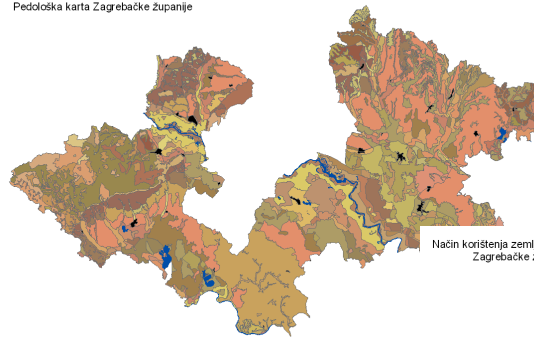


► Internal cadastre nad GIS data base developed for each parcel

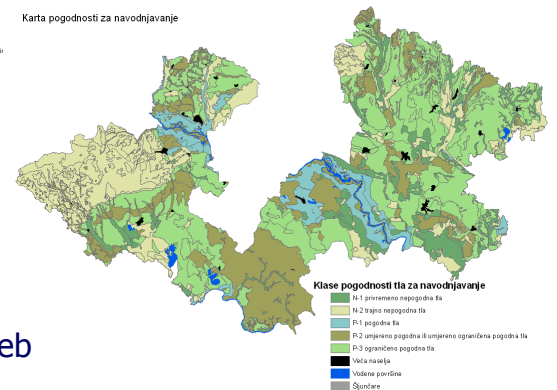
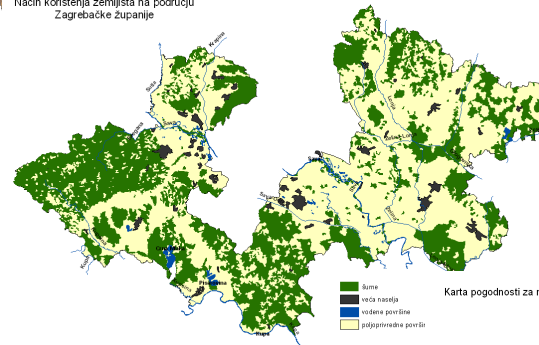
Gedološka karta Zagrebačke županije



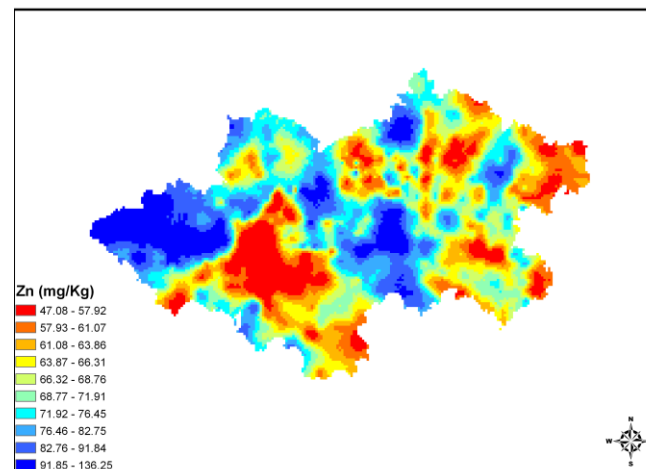
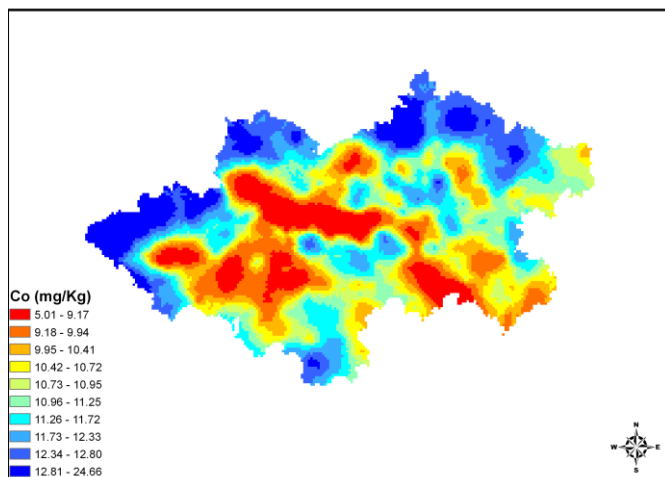
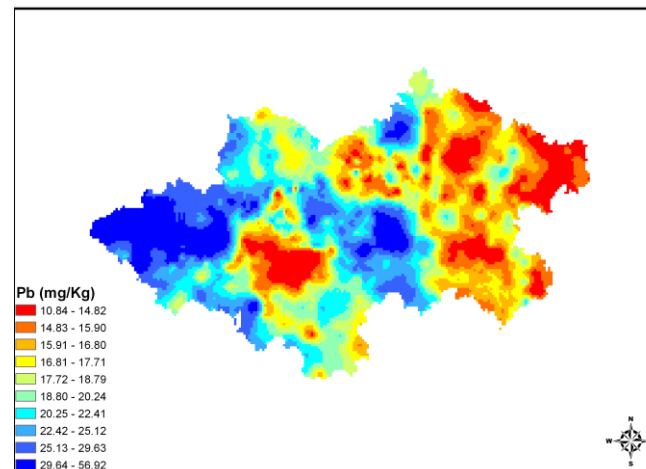
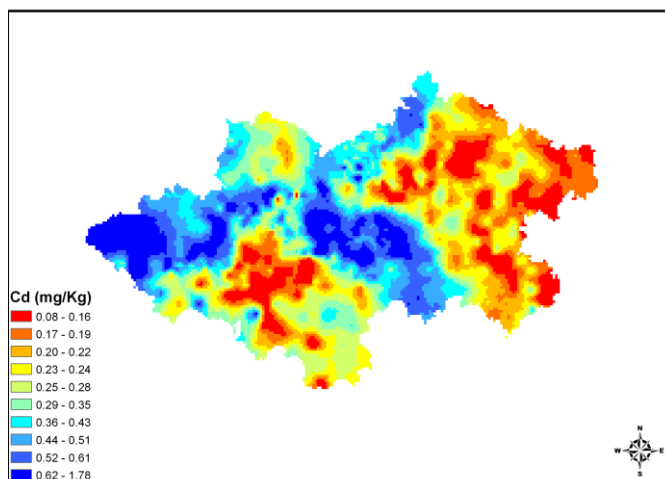
Pedološka karta Zagrebačke županije



Način korištenja zemljišta na području
Zagrebačke županije



Source: Romic et al. (2009): Agricultural production enhancement and controlling in Zagreb County (Croatia). Annual Report. Univ. Of Zagreb Faculty of Agriculture



Source: Sollitto, D., Romic, M., Castrignanò, A., Romic, D., Bakic, H. (2010): Assessing heavy metal contamination in soils of the Zagreb region (Northwest Croatia) using multivariate geostatistics. **Catena**. 80 (3): 182-194.

THE ADMINISTRATIVE DEPARTMENT FOR AGRICULTURE AND FORESTRY OF **THE COUNTY OF ZAGREB**

Is seeking to establish the inter-regional co-operation in the field of

- rural development and natural resource management**
- especially soil and water protection and land management**

**to exchange experience in developing and conducting “voluntary–based”
incentive programmes**

Project: **Salinization and sustainable use of soil in the Lower Neretva Region (Croatia)**

Financed by: GEF Grant

Client: Croatian Waters

Consultant: University of Zagreb Faculty of Agriculture

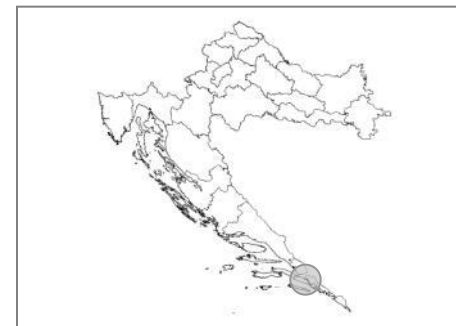


Identification of the main soil protection issues in Croatia:

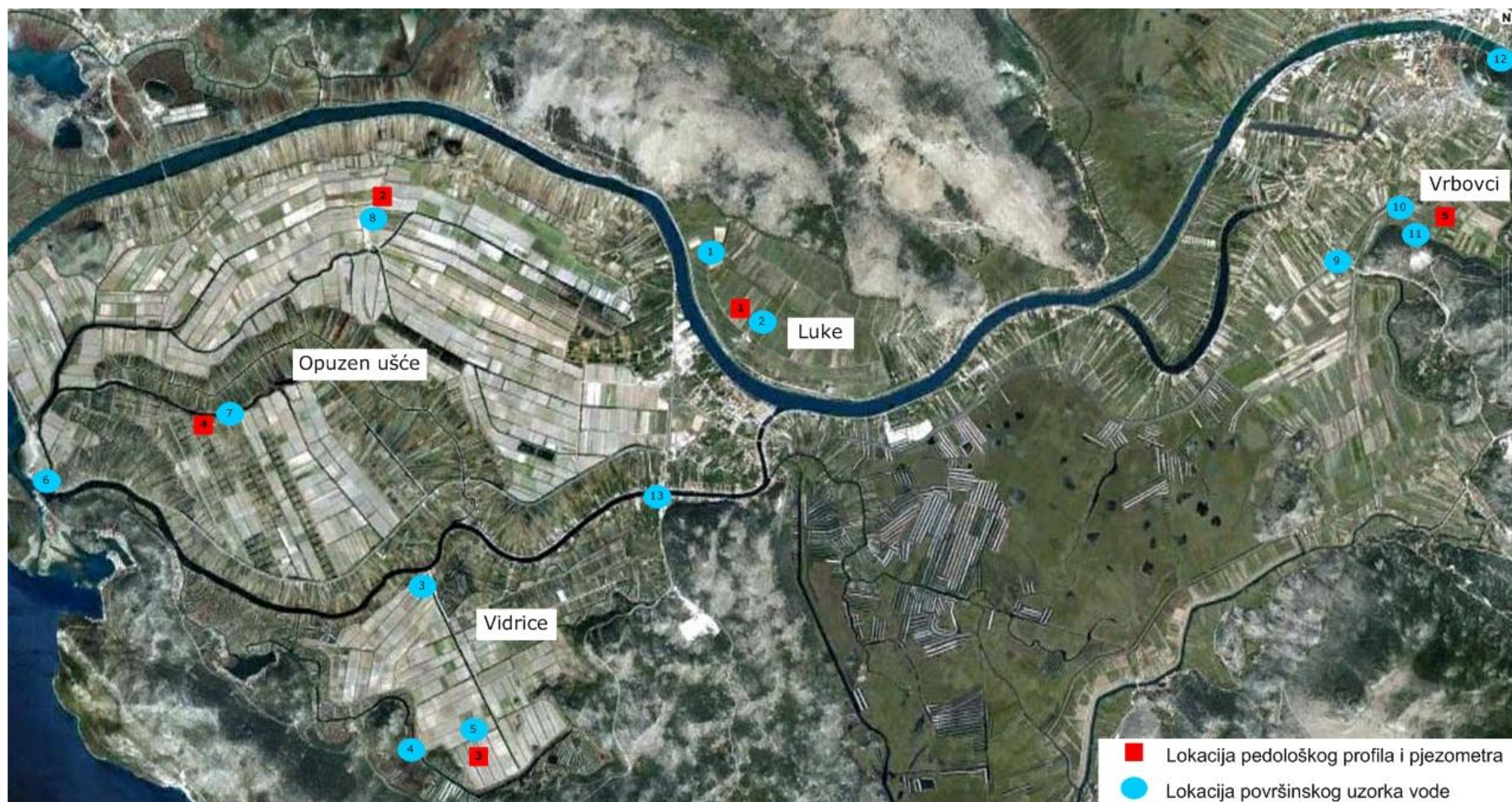
- sea water intrusion and soil salinization → important issue in the coastal region

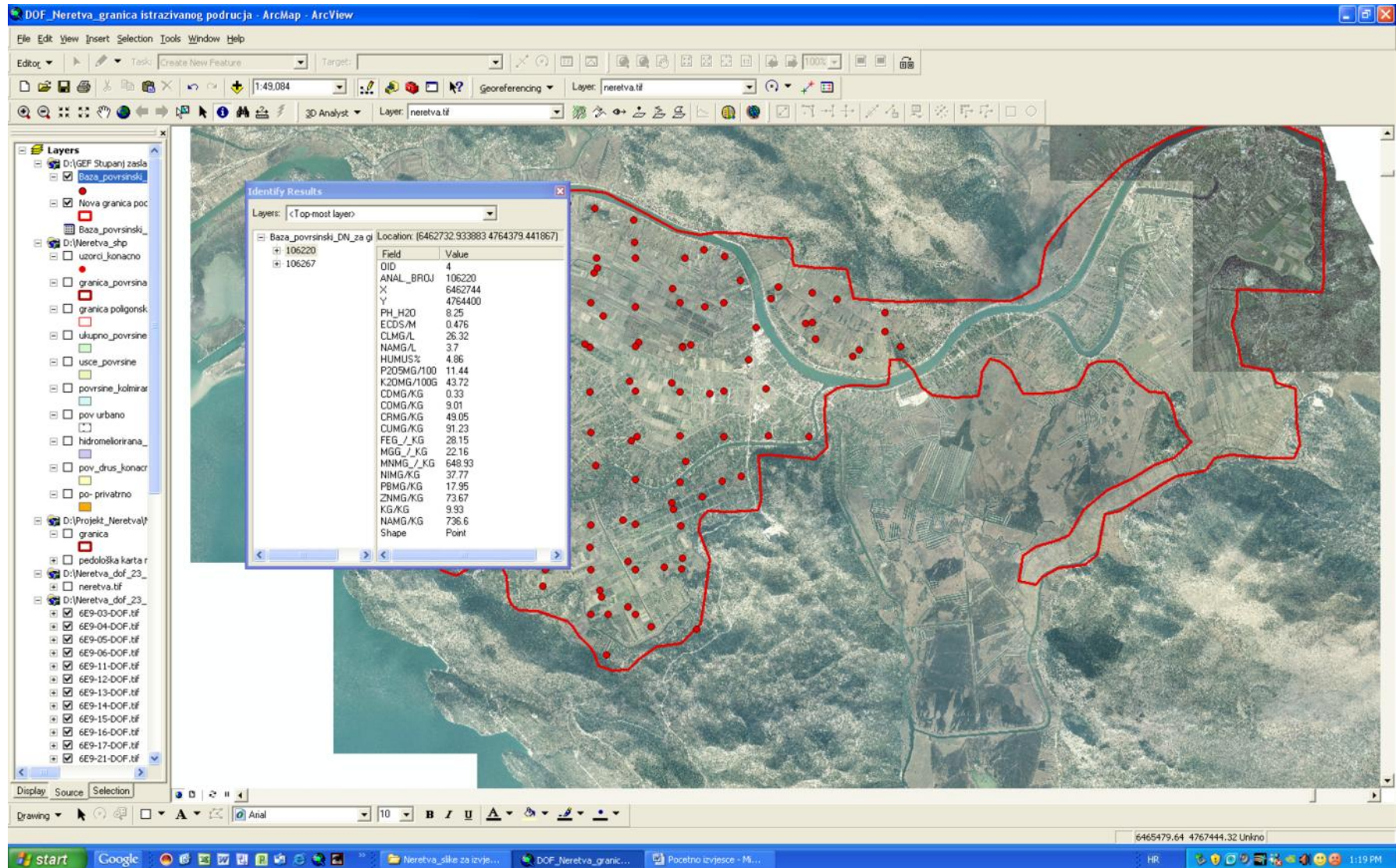
Aims:

- Soil salinization assessment in the Lower Neretva region
- Land use and agricultural production → pilot locations
- Recommendations for the future sustainable land use



Soil and water monitoring stations





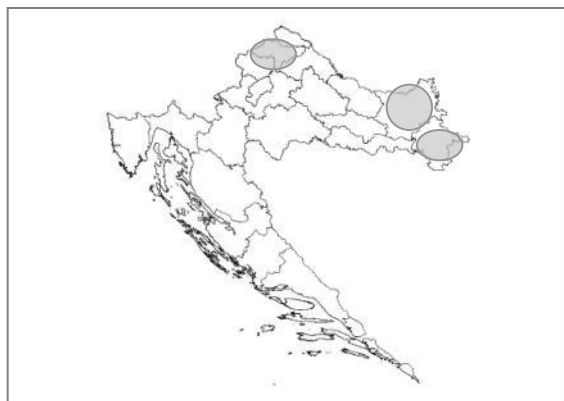
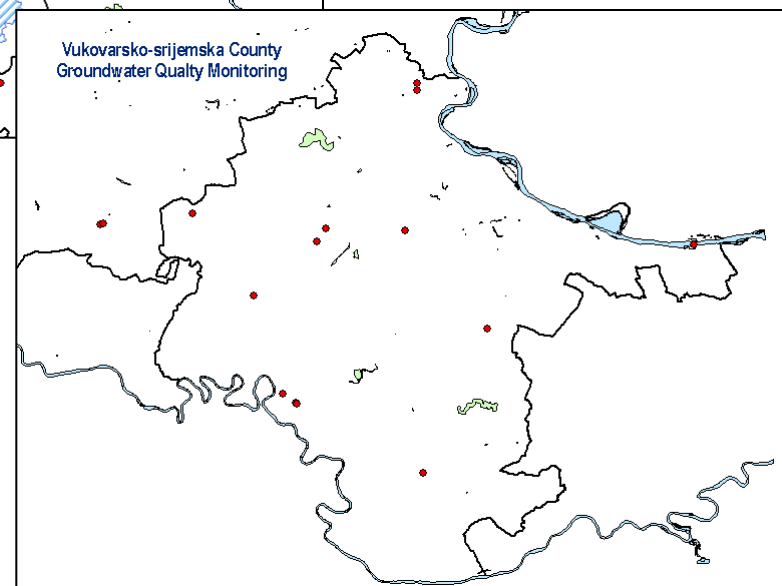
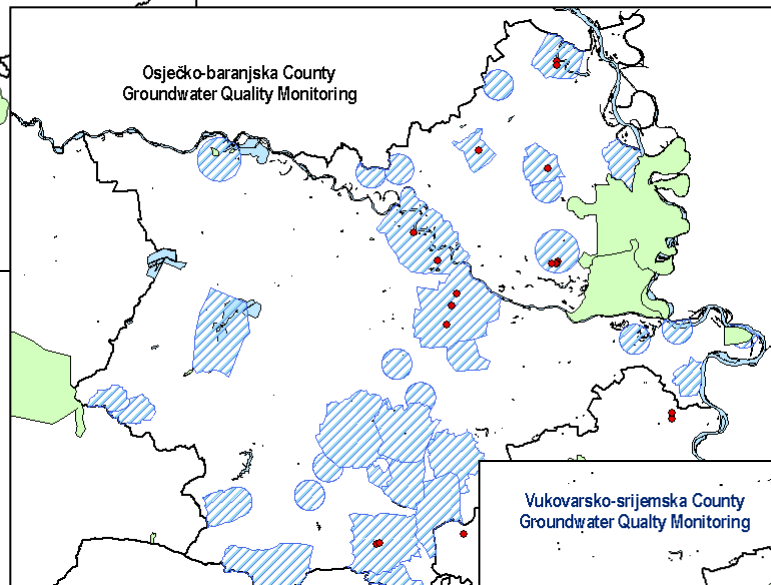
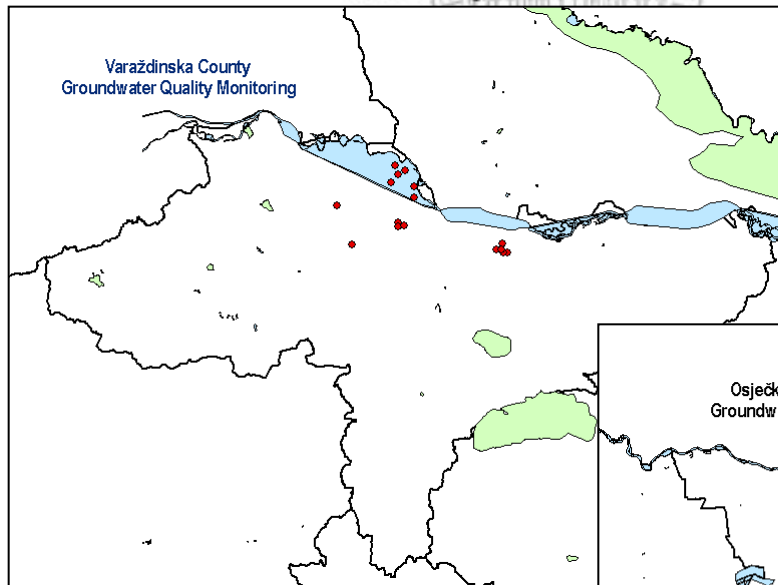
- Project:** **Monitoring the reduction of soil carbon and nutrient losses in Croatia: quality assessment/quality control of soil sampling procedures and soil analysis**
- Financed by:** Co-operation programme between Flanders and Central and Eastern Europe
- Partners:** ILVO, University of Zagreb Faculty of Agriculture and Ministry of regional development, forestry and water management of the Republic of Croatia

Aims

- Exchange of expertise between Flanders and Croatia on development of appropriate procedures for collecting data on soil samples (sampling, analysis, quality control and data reporting) and on good agricultural practice in this context;
- **decrease of greenhouse gasses:** loss of soil organic carbon and leaching of nutrients are main problems in the Croatian agriculture. and the
 - **maintaining soil fertility by Good Agricultural Practice:** (Cross Compliance - Council Regulation EC 1782/2003) - control and monitoring the soil organic carbon losses would be a step in the frame of a sustainable agriculture and EU-membership
 - **decrease or prevention of water pollution:** to fulfill the requirements of the Nitrate Directive (91/676/EU), which is obligatory for all the EU member states (target:).

Pilot locations

- Commitment of one pilot farm in 3 agricultural regions:
 - Varazdinska County,
 - Osjecko-Baranjska County and
 - Vukovarsko-Srijemska County.
- On each farm a selection of parcels will be sampled yearly to measure carbon and nitrate in the soil.
- These samples will be analysed by the Faculty of Agriculture (Zagreb) and ILVO (Merelbeke) to compare the methods of analysis.
- The relation between the data of analysis and the climatic conditions and management of the parcel will be investigated.



Conclusions

- In spite of the fact that mentioned projects tackle many soil protection issues, these activities are not carried out systematically;
- It happens very often that the data and achievements gathered by the project just remain there that implies the projects become "*Art for art's sake*"
- We also noticed that stakeholders' activities very often finish with the termination of the "voluntary-based programmes"

Conclusions

- When dealing with soil contamination monitoring, the approach is rather different:
 - Mostly research project without direct stakeholders' participation;
 - Generally demanding and expensive surveys
 - in last 15 years in Croatia has done a lot of on soil quality assessment, especially on soil heavy metals mapping
 - A difficult conditions have to be taken into account:
 - Effects of homeland war (mine suspected areas)
 - Abandoned agricultural land
 - Demanding geomorphology, particularly in karst region

- Several ongoing projects have been started up to identify specific soil threats:
 - Erosion
 - Acidification
 - Heavy metals contamination
 - Salinization

- Problem of collaboration between administration and research institutions:
 - Projects and strategies defined on the national level usually get created professionally and in detail;
 - When the competences are setting down on the lower administrative level – regional and local, then the performance control becomes weak and the results inconsistent.

- Different stakeholders have a different expectations
- We have to **identify soil use and soil protection issues** which is relevant for the most of these stakeholders
- Issues which may be raised by stakeholders, administration and researcher certainly widely differ
- Recommendations towards soil protection on the national level:
 - Soil protection strategy followed by the action plan on the national level;
 - to define ONE competent authority (or an advisory team)
 - All databases on soil properties, quality and use should be available in APPROPRIATE formats (following the yesterday discussion)
 - **Local** planning decision – provide monitoring and consultancy of relevant authority
 - Rising the public awareness → the role of universities (developing curricula) but also the other educational incentives

Thank you for your attention!