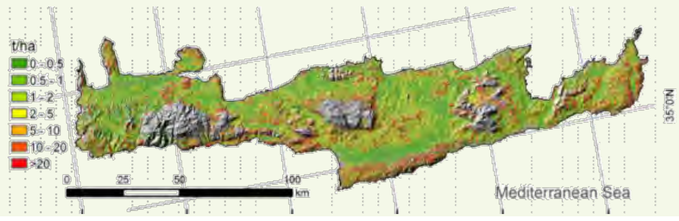
SoilCare

SOILCARE FOR PROFITABLE AND SUSTAINABLE CROP PRODUCTION IN EUROPE

STUDY SITE 12: Chania, Crete, Greece

Responsible partner: 7. Technical University of Crete

Case study leader: *Ioannis Tsanis*
Case study deputy*: Dimitrios Alexakis*



Aim of Experiment: Soil erosion assessment

- **Koufos plots(Avocado and Orange trees):** Besides financial benefits avocado farms maintain a superior overall soil quality. Here we compare erosion rates, as well as other soil quality parameters between a field that has remained an orange grove for 45 years and one that was converted to an avocado farm 20 years ago.
- **Biolea plots (Olive orchards):** Here we compare soil erosion rates between two 24-year old fields with loam soil that have not been tilled in 7 years. One serves as a control and the other was tilled in November 2017.
- **Dourakis plot (Vineyards):** Comparison of soil erosion rates in a vineyard. One field serves as a control and the other has different treatment in terms of cover crops.



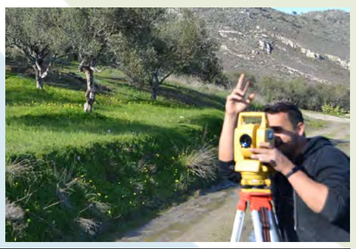



1. Installation of silt fences (sediment traps) for estimating soil losses



2. Stakeholders meetings

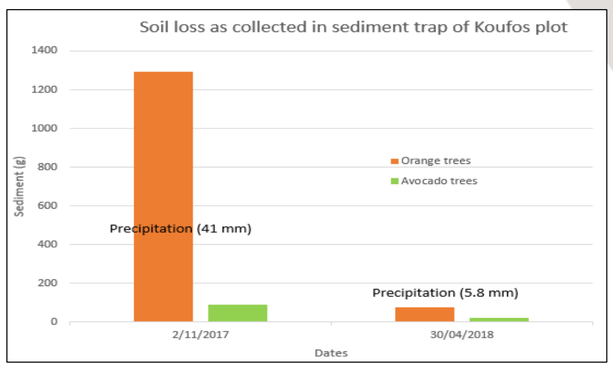
3. Collection and chemical analysis of soil samples, estimation of physical properties and GPS surveys

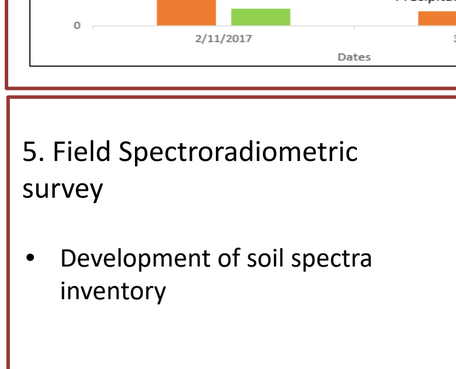
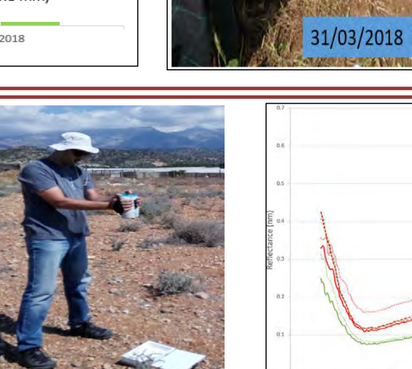






4. Monitoring of soil erosion and deposition rates (silt fences, reference iron sticks, soil profile)



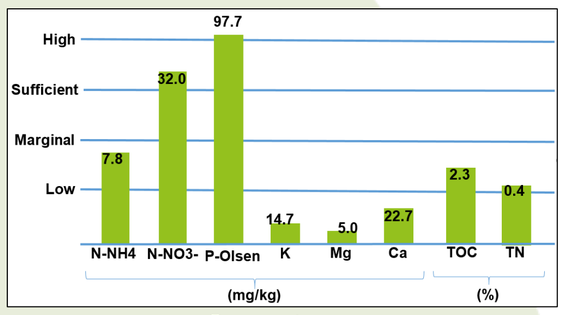



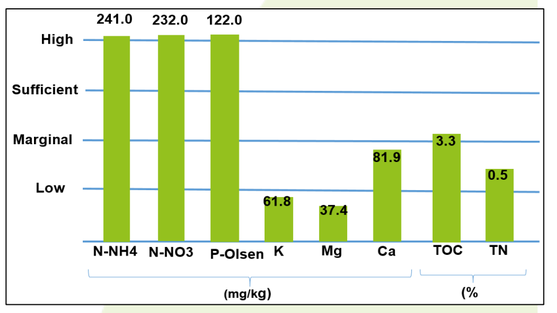




5. Field Spectroradiometric survey

- Development of soil spectra inventory

6. Chemical analysis and physical properties preliminary results

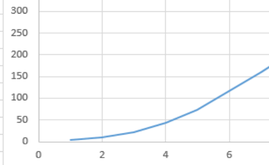


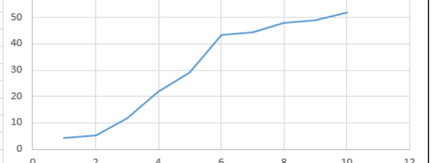


Orange trees

Avocado trees

Oranges		
Site 1		
Infiltration		
	Total Time	Difference
1	4.33	4.33
2	9.69	5.36
3	21.47	11.78
4	43.42	21.95
5	72.36	28.94
6	115.83	43.47
7	160.04	44.21
8	207.83	47.79
9	256.8	48.97
10	308.64	51.84
Soil Roughness		
X	0	
Y	3	





SAS Scores				
	Orange		Avocado	
	1st Day	2nd Day	1st Day	2nd Day
S1	1	1	1	0
S2	1	1	0	0
S3	2	2	1	1

Score	Condition
0	Poor
1	Moderate
2	Good

7. Dissemination/Parallel work

- Prediction of soil erodibility, Soil Organic Matter and CaCO3 using Vis-NIR spectra

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Monitoring soil erosion with means of sediment fences and Earth Observation in Crete, Greece

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Using field spectroscopy and atmospheric correction methods for Land use/Land cover monitoring in Crete, Greece.

8. Discussion

- Only in cases of extreme precipitation events (such as the event of 26/10/2017 (41mm of precipitation)) substantial soil amount is trapped in the sediment fences (more than 2kg of soil collected in each fence due to sheet erosion).
- Characteristic example is the experiment in olive orchards where although part of the study area was tilled, minimum difference was evident in the collected deposited soil between tilled and no tilled area.
- The experiment needs at least two more year in order to have substantial and comprehend results
- Estimation of K factor (soil erodibility) for the broader area of Chania

The **SOILCARE** project is a 5 year project aimed at identifying and evaluating promising soil improving cropping systems and agronomic techniques increasing profitability and sustainability across scales in Europe.

The SOILCARE project consortium consist of 28 partner institutes from 10 European countries
The SOILCARE project is coordinated by ALTERRA, Wageningen UR, The Netherlands.

• Starting date: March 1st 2016. • Ending date: February 28th 2021. • EU contract number: 677407

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