PORTUGAL – Baixo Mondego

WP3: Stakeholders involvement

Selection of multi-stakeholder panel

Participatory review of which cropping systems can improve soil quality

Participatory identification of current benefits and drawbacks of Soil Improving Cropping Systems (SICS)

Participatory selection of trial and SICS for further experiments (study site selection)

Implementation of SICS on the trial fields in collaboration with stakeholders.

Stakeholder Panel composed by 16 members: 3 from national public institutions, 2 agricultural teaching institutions, 3 farmers' organizations, 2 private commercial companies.

SICS discussed with stakeholders:
1- changes in soil mobilization techniques (minimum mobilization)
2- changes in soil management (conversion of monoculture to rotation/succession techniques)
3- changes in fertilization practices (promotion of organic fertilization)
4- changes in phytosanitary treatments (more sustainable use)

Selection of 3 SICS in a participatory meeting organized in May 2017.

Implementation of SICS in the field is performed in collaboration with 4 stakeholder institutions, that provided terrains, equipment and manpower!




WP5: Monitoring

SICS 1 :- **Rotation system - Bico da Barca** – Organic Rice in rotation with perennial lucerne (two years of rice + 2 years of Lucerne).

SICS 2 : **Succession system - Taveiro -** Principal crop (grain corn or sunflower) integrated in a succession of legumes (clover, pea, trefoil….) used as green manure.


SICS 3 : **Organic fertilization system - São Silvestre -** Organic fertilization system from urban origin (sewage sludge)

WP4/5: Assessment methodology

Parameters analysed in 2017

Soil physical and chemical parameters: Penetration resistance, Textures and granulometric fractions, pH (H_2O), Oxidable Organic Matter, Soil moisture content

Soil Fertility: Nitrogen (Total Nitrogen, Kjedahl, Nitric, Ammonium), Available phosphorus and available potassium

Soil biological parameters: decomposition rates

Soil Structure: Exchange cations (Calcium, Magnesium, Potassium, Sodium)

Watering parameters: Field capacity, Infiltration capacity

Crop parameters: Yield, humidity

Soil sampling

Performed at two depths (0-15cm and 15-30cm)

SICS 1: Crop rotation (Bico da Barca)

- First sampling campaign in September 2017
Conventional Rice : 8 samples
Organic Rice: 8 samples
Lucerne: 8 samples
- Second campaign in May 2018
Conventional Rice : 18 samples (3 plots, 3 repetitions, 2 depths)
Organic Rice: 18 samples
Lucerne: 18 samples

SICS 2: Succession system (Taveiro)

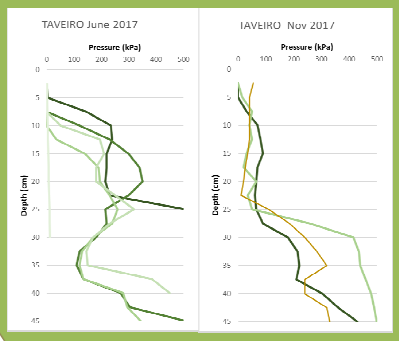
- First sampling campaign in May 2017
Conventional Corn /sunflower : 40 samples (4 lines, 5 repetitions, 2 depths)
- Second sampling campaign in November 2017
Conventional Corn /sunflower : 50 samples (5 lines, 5 repetitions, 2 depths)
- Third sampling campaign in May 2018
Red Clover: 18 samples (3 plots, 3 repetitions, 2 depths)
Clover of Persia: 18 samples (3 plots, 3 repetitions, 2 depths)
Lupine: 18 samples (3 plots, 3 repetitions, 2 depths)
Trefoil: 18 samples (3 plots, 3 repetitions, 2 depths)
Control: 18 samples (3 plots, 3 repetitions, 2 depths)

SICS 3: Organic fertilization (São Silvestre)

- First sampling campaign in May 2018
Conventional Corn with sludge: 18 samples (3 plots, 3 repetitions, 2 depths)
Control: 18 samples (3 plots, 3 repetitions, 2 depths)

Some preliminary results

Spatial and temporal variability of Organic matter content in Taveiro for Corn monoculture



Spatial and temporal variability of Soil Compaction in Taveiro for Corn monoculture

	PH	Organic Matter	N Total Kjeldahl	Phosphorus P2O5	Potassium K2O	Mg2+	Ca2+	K+	Na+
	H2O	%	g/kg	mg/kg	mg/kg	cmol/100g	cmol/100g	cmol/100g	cmol/100g
Convencional Rice	5,7	1,8		118	219	1,3	7,4	0,4	0,2
Organic Rice year 2	5,8	2,1	1,5	97	92	1,0	4,1	0,2	0,2
Perrenial Lucerne year 2	5,7	2,0	1,7	62	51	1,0	4,5	0,1	0,1
Corn monoculture	6,0	1,7	1,4	55	83	1,2	7,1	0,2	0,2

Average Soil quality parameters analyzed after harvesting in 2017 (n=40 for Corn and n=24 for Rice/perennial Lucerne)

		Machinery	Seeds	Fertilization	Protection M/Q	Production		Benefits
		euros/há	euros/há	euros/há	euros/há	kg/há	euros/kg	euros/há	euros/há
Perrenial Lucerne	Year 1	280	240	105	0	8000	0,16	1280	655
Perrenial Lucerne	Year 2	180	0	0	0	12500	0,16	2000	1820
Organic Rice	Year 3	280	200	105	525	5000	0,60	3000	1890
Organic Rice	Year 4	280	200	105	525	3000	0,60	1800	690
									1264
Convencional rice	Year 1	280	200	455	310	7000	0,30	2100	**855**

Cost Estimation for Organic Rice in rotation with Lucerne VS Conventional Rice monoculture

WP7: Policy analysis

Policies inventory:
-15 UE policies
- 23 MS policies

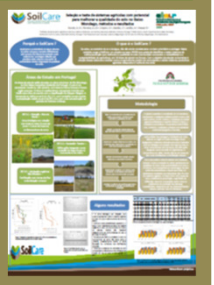
3 in-depth analysis :
- PDR – Rural Development Program
- Nitrates directive
- Pesticides directive

4 interviews:
- CCRCG - Commission for Coordination and Regional Development of the Center Region
- DRAPC - Regional Directorate of Agriculture and Fisheries
- University of Évora
- CAMV - Agricultural Cooperative of Montemor-o-Velho Municipality

WP8: Dissemination

Multi-stakeholders advisory panel meeting (24th April 2018)

Poster in CIALP international conference (May 2018)



Publication in the Nacional Technical Journal AGROTEC

Poster in EGU General Assembly (April 2018)

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 2020. • EU contract number: 677407

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