



ECOSOM – SUSTAIN kick off meeting

Programme



Tuesday 10/01/2012 - Paimpont

- **8h00** : breakfast time
 - **8h45-9h00** : introduction and partner presentations
 - **9h00-10h00** : presentation of both programmes
 - ECOSOM (20 minutes, S. Houot, L. Vieuble)
 - SUSTAIN (20 minutes, G. Pérès)
 - SNOWMAN aspects (20 minutes)
 - SNOWMAN requests (S. Houot, G. Pérès)
 - SNOWMAN administration points (Antonio Bispo)
 - **10h00-10h15** : coffee Break
 - **10h15-11h15** : site presentation (by the managers of the sites)
 - ECOSOM -> 10' for NL, 10' for Sweden
 - SUSTAIN -> 10' for France, 10' for NL
 - Discussion 10'
 - **11h15-12h15** : presentation and homogeneization of protocoles
 - parameters measurements and protocole used
 - biological (earthworm, nematodes, microbiology, enchytreides)
 - physical (soil structure, soil stability, water movements, nutrients flux, degradation of organic contaminant)
 - chemical (OM)
 - **12h15-13h35** : lunch time
 - **13h45-14h30** : Ecosystem service : food production (economical approaches)
Presentation by each experts
 - **14h30-15h00** : modelling approach (presentation by each experts)
 - LCA
 - **15h00-15h15** : coffee break
 - **15h15-15h45** : Data management (data base, data mining)
 - **15h45-16h30** : Dissemination part
 - **16h30-18h00** : Synthesis and future organization
 - **18h45** : Diner time
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Notes SUSTAIN meeting Jan 10-11, Paimpont

Day 1, with ECOSOM

Antonio Bispo about SNOWMAN

A new call is being developed about socio-economic factors. It will come out end of 2012.

Suggestion to contact STRAS-SAT to see if we can prepare a proposal on the socio economic factors for reduced tillage systems.

If overlap of deliverables between SUSTAIN and ECOSOM, they can be combined.

To modify plan or tasks we should contact Antonio.

Scientific reports should be separated, but common dissemination is encouraged.

Sabine Houot about ECOSOM

About organic matter -> key role in soil functions.

Management to restore OM -> organic waste recycling and reduced tillage.

- Microbial biodiversity,
- Climate regulation (GHG emission, NH3),

See ppt presentation

Guenola Peres about SUSTAIN

See ppt presentation

Questions/remarks:

Soil type / soil texture; we have to make sure that the recommendations and dissemination cover different soil types

Guenola: develop indicators for loamy soil and apply them in the network of farms to cover a range of soil types.

Guenola about ECOSOM-SUSTAIN collaboration

Meetings:

Request from SNOWMAN: 2nd Common meeting

Joint meeting, now and in 2014 (just before stakeholder meeting). This seems not enough, at least for the tillage part of SUSTAIN there should be more interaction. Possible combination of NL and S researchers on ECOSOM with the SUSTAIN meeting in NL.

-> 1) wageningen (reduced tillage)

+ 1 à Paris (OM)

Every 6 months phone meeting

Organize thematic meetings ->

- Wijnand: LCA and modelling -> combine with Tilman (Josephine Peigné- ISARA). Organize a thematic meeting about this with ECOSOM and SUSTAIN + Josephine or her team.

- Dissemination

Combined technical brochures. Possible meeting about dissemination.

Common activities: description of tillage types, harmonization of protocols

Jack about S-Limburg

25 yr chronosequence,

Subsidies for RT and cover crops, 50-100 euros per ha depending on slope. Tillage <12 cm is reduced tillage.

After 2013: Reduced tillage with cover crops will be the rule by law. In future Wijnandsrade (PPO experimental farm) may be the only farm that still has Conventional Tillage

Parameters measured (PPO- Wageningen UR) -> crop yield, Diesel usage (every year).

Penetration resistance : no clear difference between conventional and reduced tillage -> from 5 years.

More stable aggregates, increase of water infiltration (but with high heterogeneity).

Infiltration unit mm/minutes. Higher in reduced tillage, but only one site under conventional tillage. High variability in reduced tillage due to various soil types, crops etcetera.

Need to have a list of the parameters which are measured in each sites and also the date of measurements.

Heddadj on Bretagne

Site Kerguehenec managed by Chambre of Agriculture

890 mm / 11 C

FKA site: Crop rotation: maize-wheat and phacelia

Since 2006

3 blocks

High organic matter. Analysis of amendement are also made.

Parcelle 6 hectares -> 1994; demande acquisition de références sur approches systèmes. Il va s'intégrer dans une approche globale, innovante en maintenant l'impact du travail du sol à l'échelle système.

Essai système dans, plus

Mirjam on NL sites SUSTAIN

No till is very rare in NL.

3 field experiments, in both conventional/organic.

Lelystad since 2008.

Conventional ploughing 25-30 cm

Non-inversion : subsoiler to break compaction

Minimum : closed to reduced tillage in French system; no direct drilling

(4 replicates).

Biology measurements -> EW, nematodes, microbial biomass.

Microbial community in NL will be measured in ECOSOM –

Westmaas -> conventional farming system.

Farm network mixture of organic and conventional -> new initiative with 80 farmers representing different soil type, community of practice.

Crop residues are returned to the soil.

Vincent Hallaire on physical methods

- Soil structure, bulk density ()
- Agregate stability measurements ->
- Pore characterization -> image analysis
- Hydraulic conductivity ->

Saturated hydraulic conductivity – at 8 cm depth, where there is a structural change. But under Conv Tillage.

Haddadj: shows results that demonstrate the crust is limiting infiltration.

Decision: all use double ring method, can also be used by farmers. Level of saturation?

Aggregate stability – designed for erosion studies: 3-5 mm dry sieved aggregates only, slaking, prewetting in ethanol, slow wetting. ISO standard for method LeBissonais

Not for organic matter dynamics

We should also consider whole soil samples and make methodological comparisons across sites (small subsample of samples from each site)

Earthworm sampling:

France: Formaldehyde extraction first on 1m², then extract 25x25x25 cm by handsorting. 3 spots per plot.

Jack: Handsorting 50 x 50 x 20 cm. Use mustard in the pit. 3 observations per field or block, depending on the design/budget

Sampling in row or between rows?

We cannot change methodology now. So we will compare methods.

Nematodes; 1 sample per plot (composite). 500 grams sent to Cecile Villenave at 4 C.

Sampling in February-March?

Hydraulic conductivity and aggregate stability: 5 times per year because of large seasonal dynamics

Soil physical measurements: one sampling is in May-can we combine that for NL and France.

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Physical fractionation of OM?

⇒ Safia: Will we go for processes or just characterization ??

Idea -> for all parameters to sample at one moment at one trial or de manière aléatoire.

F – SUSTAIN :

NL –SUSTAIN :

2 dates : May, June and Fall.

NL – ECOSOM

Give protocols for each method!

		Method France SUSTAIN	NL SUSTAIN	NL ECOSOM	F ECOSOM
	bulk density				
	Agregate stability measurements	LeBissonais, more adapted to erosion	All soil sieved, method commonly used in litterature	On different aggregates size	
	Pore characterization	image analysis			
	Hydraulic conductivity	near saturated conditions, TRIMS	- Lab method (WIN method) - Field (double ring) saturated conditions, but it is not really saturated	- Double ring method	-

OM characrizatio n					
EW			Hand sorting 20X20 cm X 20 cm, Formalhedyde 3 replications per field within plots	Hand sorting 50X50 cm X 20 cm, mustard extraction. 3 replications per field	

ECOSOM Evolution in time

Microbial Biodiversity

C, N cycles -> in lab conditions.

Degradation of organic pollutant (antibiotic,), soil resilience (tillage and no tillage site,

Microorganisms (antibiotic resistance) –could be assessed in FKA.

Lunch break

Heddadj on measurement of ecosystem services

Ag production, yields + NL SUSTAIN – Proteins in grain. F- ECOSOM – elements in grain and residues, wheat maize. Not mycotoxines actually but could be added

Greenhouse gases,

ECOSOM -> at lab : emission of N₂O on different wastes or from soil, ammonia volatilisation, N leaching , at field (with lysimetres). Sophie develops a methodology for measure N volatilisation.

SUSTAIN : no direct measure of N leaching. Some new data could be available from a student in NLs. Also PhD project Jerke de Vries

Water regulating services

Pesticide use

SUSTAIN – F -> leaching of pesticides in solution, in NL : only data of input available

ECOSOM – F -> degradation and leaching of pesticides, NL : no informations, S : informations.

Soil conservation

- Many parameters will be integrated to answer to this ecosystem service. Sabine and ECOSOM have propose a table which will be filled by everyone.

Michael on LCA

ACV SOL project. First attempt to include soil quality indicators in LCA.

- Soil erosion
 - Change in SOM
 - Soil compaction
- Next? → Soil biodiversity

Methodology Geier et al 1999; diagram

Functional units? Per kg of produce or per ha-1? Or both? Often they show the opposite

Minimum Data Set

- List of indicators for compaction, SOM and soil compaction
- What is needed for soil biodiversity??

What about water use??

Relations between different indicators?: we can explore those?

Dissemination

ELN-FAB

Use farmers websites not scientific project websites

Produce separate brochures for organic waste management and tillage.

ECAF – European CA federation

notes Guenola:

- Before July
- ICAVe -> meme chose.
- Interactif web site -> just with partners and not with all over the world.

Comparison of methods

Earthworms: literature study and comparison of data from handsorting+form small block and large block for French data set

Hydraulic conductivity: complementary method. We will do both methods at a subset of French and Dutch sites. France in March 2012. Lelystad in May 2012.

2nd day

Presentation Stefan Schrader

54% of Germany under agriculture

20% under conservation agriculture

Mainly for rape, cereals and sugar beet

Christine Van Capelle et al Eur J of Soil Biol (submitted) Literature study on soil biodiversity. Review (950-2010)

Larger animals (earthworms) increased with reducing tillage intensity

Nematodes no change

Smaller arthropods (collembola) decreased with decreasing tillage intensity

Strong impact in soil texture and necessity to take into account functional biological groups.

→ Proposal : the technical guide could be translate in german.

Database (Laurence)

Example from bioindicator project

Qualitative and quantitative data

In Microsoft Access

- INRA -> no database
- WU NL -> no database
- WU PPO -> work on database physical, chemical data.

Planning

Samples for aggregate stability – to be taken in May in both sites. Discuss procedure with Jack and Safia.

Comparison of physical field methods: In May in NL (Lelystad INT), March? In France.

What about Jack??

Nematodes: send 500 g of soil to Cecile Villenave. How many samples? methodology comparable ???

Earthworm: Mirjam lit study; Muriel will look at data from France. Then we will take a decision.

Student exchange

Erasmus students for internship?

Housing close to the field?

Djilali MASC economic approach

Multi attribute assessment of the sustainability of cropping systems

National tool INRA

Qualitative results (weighted)

3 pillars, economic, social, environmental

Used in workshops with farmers to evaluate cropping systems and guide innovation

Also comparable with Rise model in Switzerland and Germany

To be done in 2013 and 2014

There is some info on internet on the MASC approach – will be distributed

About WP6 – Economic and sociological assessment

Innovation processes

Methodology: Survey of farms – 3 parts: agronomic, social part (profile, perceptions) and economic (financial, labour) part.

At least 5 years of reduced tillage (at least part of the farm), compared against nearby farms that do not use reduced tillage.

Network : increase the number of farmers who are not interesting in reduced tillage, and some who tried and then stop.

Another difficulty is the many forms of reduced tillage that occur among the group of farmers

See also report ADEME

Wijnand: we also need insight in the reasons not to adopt and to disadopt. Also compare with the Tilman project approach; survey proposed by Joséphine Peigné, Marion

⇒ Keep it in our mind because this is an activity that will be done later in the project

Publications

There will be individual publications about each site

We could have joint data presentation for biological and physical data that will be collected jointly

About indicators, Multivariate Statistics

Relations between soil parameters and Ecosystem Services

About LCA

About method comparison

About socio-economic aspects?

Take it per WP.

WP1)

WP2) – soil biodiversity Mirjam and Guenola

WP3) – soil functions Vincent en Mirjam

WP 4) - Soil services CRAB Djilali - Mirjam

WP 5) - Economic and sociological - Wijnand

WP 6) LCA : Michael and Wijnand –

Dissemination: Guenola and Ben

Wrap up

2nd snowman meeting 3 days beginning of 2014 (April??)

Reduced tillage meeting – presentation of results

OM Meeting ECOSOM

LCA

Dissemination

EUROSOIL + COIMBRA

Third meeting 2014 Paimpont beginning of 2014