**EIP-AGRI FOCUS GROUP N° 5**

**SOIL ORGANIC MATTER CONTENT IN MEDITERRANEAN REGIONS (BOTH ARABLE AND PERMANENT CROPS)**

**MINUTES SECOND MEETING - LISBON (PORTUGAL)**

**18-19 SEPTEMBER 2014**

**Summary**

The second meeting of the EIP-AGRI Focus Group on Soil organic matter content in Mediterranean regions (both arable and permanent crops) was held on the 18th and 19th September 2014 in Lisbon, Portugal. See the list of participants in the Annex 1.

The questions to address in this Focus Group are "How can we improve soil organic matter content in the Mediterranean region in a cost-effective way? and What new solutions for securing soil functionality and soil fertility can be proposed in this regard? and the Second meeting aimed to (i) identify needs from practice and propose directions for further research and (ii) identify priorities for innovative actions.

First discussions in the group were framed by a Grid analysis (in Annex 2 as an attached document) elaborated by the coordinating expert, based on the information gathered in the first meeting and the information contained in Mini-papers developed by experts. The grid analysis had been circulated to the group's members in advance. Based on this grid analysis, the 17 participating members (3 were excused) identified several research gaps and cooperative projects related to:

- practices designed at enhancing soil organic matter (SOM) content of Mediterranean soils;
- techniques designed at monitoring the SOM content of Mediterranean soils, and related, relevant soil properties;
- knowledge transfer and adoption of novel techniques for improving the SOM content of Mediterranean soils;

either for arable or permanent crops.

Four discussion groups were organized in order to identify and prioritize the needs from practice and propose directions for further research on the above-mentioned two first items, namely the practices and techniques of monitoring. About 10 topics per group were listed (full list in Annex 3), and the top 4 research topics identified, yielding a total of 16 priority research topics (see Annex 4). Then, the same discussion groups were asked to exchange points of view about the way to develop further cooperation models in selected research areas that had been previously identified as high priority (see Annex 5).

The second day of the meeting was dedicated to short presentations of a range of projects by various experts of the Focus Group (see Annex 6). The Group worked on the concept of Operational Groups and discussed the steps and challenges when setting-up and developing them. Besides, participants were asked to propose potential topics for future Operational Groups (see Annex 7).

The final part of the meeting was dedicated to the missing steps before the closure of the Focus Group, which are the elaboration of the final report and the dissemination plan for the outputs. To address these various issues, a short discussion was organized prior to the end of the meeting.
Thursday, 18th September 2014

The focus of the first day (afternoon session) was to initiate an exchange of viewpoints around the grid analysis, and its gap analysis on various sub-topics. After a brief welcome and presentation about the expectations for the second meeting of the focus group and also an outline for the structure and possible content of the final report by Silvia Dietz (DG AGRI), Jorge Blanco (EIP Service Point) introduced the meeting agenda (Annex 9). Then, Philippe Hinsinger (coordinating expert, EIP Service Point) presented a short summary of the Mini-papers that had been prepared by experts, and the general structure of the grid analysis in order to set the stage for the Focus Group work and discussions.

Two break-out sessions took place afterwards, the first one aiming at identifying and defining needs from practice and propose directions for further research. The participants were asked to organise themselves in the following four thematic groups: (i) Carbon resources and techniques of application of carbon-rich inputs, (ii) Soil/plot management techniques (tillage, mulching and irrigation), (iii) Biology-based techniques (crop management, use of bioeffectors and microbial innoculants) and techniques to assess the biological component of soil quality, and (iv) Techniques for measuring and monitoring SOM in soils. For each of these 4 groups/themes, participants were asked to make a list of about ten topics regarding research needs or knowledge gaps; the groups were asked to attribute points (in a scale of 1 to 3) to each one of their own topics according to three attributes: relevance for farmers, relevance for the environment and innovative dimension. Thereafter, a speaker per group presented their conclusions and marking results to the plenary. Then all other experts, out of the group at stake, were asked to vote on the topics they considered more relevant; each person had 4 votes, except for the farmers and farm advisors who had 8 votes since they are a minority in the group (see Annex 3 for the full list of selected topics and their score). The results of this voting enabled the Focus Group to ultimately produce a list of 16 topics associated to needs from practice for further research that were considered to be highly relevant for improving the SOM content of soils in Mediterranean regions of Europe (see the topics in bold in Annex 3; also compiled in Annex 4).

A second break-out session then took place with the same four groups. Each group was asked to think about how to develop further cooperation models for one of the four research topics that had obtained the highest score (priority) at the previous step. The purpose of this exercise was mainly to exchange points of view on ways to improve knowledge transfer and adoption, and to discuss on how to conduct collaborative research projects involving various types of stakeholders (see Annex 5).

Friday, 19th September 2014

The aim of the second day was to identify possible topics for Operational Groups. After short presentations of various types of on-going projects by several experts of the Focus Group (see Annex 6), a general presentation about the concept of Operational Groups under the Rural Development Programmes was given by Silvia Dietz (DG AGRI) (see Annex 10).

A third interactive session was organised then, in order to work on the concept of operational groups and discuss the steps and challenges that presumably partners will be facing when setting-up and developing them. To start with, three farmers and one farm advisor from the Focus Group were asked to identify a practical problem to be solved; then, four groups were made in order to design the contours of a possible Operational Group that would tackle the selected problem. Finally, rapporteurs of each of the four groups shared the findings with the whole Focus Group.

The four problems addressed in this break-out session were as follows: (i) how to evaluate the status of a soil, especially for those properties linked with SOM, (ii) how to optimize the use of inputs (especially...
fertilizers) in conservation agriculture, (iii) how to find the perfect match in crop rotations (what should be the third crop?) and (iv) how to develop a cost-effective way for farmers to incorporate orchard residues like wood cuttings and other types of organic residues (see Annex 7).

A final discussion in plenary occurred with the aim of reflecting on the whole exercise and to come up with a broader list of possible topics for Operational Groups (see Annex 8).

There was then time to discuss about the best ways to work collaboratively to elaborate the final report of the Focus Group and which documents should be included, particularly in respect to the Mini-papers and Grid analysis. It was agreed to revise these in order to yield a more homogeneous format before including them as annex to the final report. There was also an agreement on the next steps and experts were given a week to send their additional comments to the EIP Service Point, on both the grid analysis and the mini-papers. Also, it was agreed that participants could send further suggestions on topics for operational groups and would send inputs for the dissemination plan of the Focus Group outputs.

Finally, the participants were asked to give some feedback on the whole process and to complete their evaluation sheet.
Annex 1: List of participants

EXPERTS:
- Dimos Anastasiou, farmer; scientist, Greece
- Miquel Aran, farm advisor, Spain
- Jérôme Balesdent, scientist, France
- Gottlieb Basch, NGO; scientist, Germany
- Borbala Biro, scientist, Hungary
- Isabel de Maria Cardoso Gonsalves Mourão, scientist, Portugal
- Edoardo Costantini, farmer; scientist, Italy
- Maria Teresa Dell’Abate, scientist, Italy
- Helena Gomez Macpherson, scientist, Spain
- Jaume Lloveras, scientist, Spain
- Filipe Marques, farmer, Portugal
- Carolina Clara Martínez Gaitán, scientist; agricultural private sector, Spain
- Avraam Mavridis, scientist, Greece
- Jacques Neeteson, scientist, Netherlands
- Antonio Perdigão, farmer, Portugal
- Giampaolo Sarno, farm advisor, Italy
- Sideris Theocharopoulos, scientist, Greece

DG AGRI and EIP-AGRI Service Point:
- Silvia Dietz (DG AGRI)
- Jorge Blanco (EIP Service Point)
- Margarida Ambar (EIP Service Point)
- Philippe Hinsinger (EIP Service Point)

EXCUSED:
- Stéphane Follain, scientist, France
- Carola Konsten, farmer, Netherlands

Annex 2: Grid analysis
(see separate document as attachment)
Annex 3: Full list of topics for further research

**Group 1 - Carbon resources: application of C-rich inputs**

<table>
<thead>
<tr>
<th>Topic</th>
<th>GROUP SCORE</th>
<th>FARMERS SCORE</th>
<th>Final Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MANURE TREATMENT: Dehydration/Composting</td>
<td>7</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>2. MANURE APPLICATION: Machinery, Decision Support Services,</td>
<td>9</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>Precision Agriculture, GPS &amp; Sensors, Novel techniques)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. STANDARDS FOR MANURE (Inventory): Nutrient content vs stability</td>
<td>6</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>indicators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SEWAGE SLUDGE: Characterization, treatment, application</td>
<td>7</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>5. PLANT RESIDUES: Pruning, straw, other plant residues</td>
<td>7</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>6. FOREST: Sources from clearing invasive plants</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>7. DOMESTIC RESOURCES - FOOD WASTE COMPOST: Quality, composition</td>
<td>7</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>8. AGRO-INDUSTRIAL BY-PRODUCTS</td>
<td>7</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>9. BIOCHAR</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>10. BIODIGESTATE</td>
<td>8</td>
<td>0</td>
<td>11</td>
</tr>
</tbody>
</table>

**Group 2 - Management: tillage + irrigation + mulching**

<table>
<thead>
<tr>
<th>Topic</th>
<th>GROUP SCORE</th>
<th>FARMERS SCORE</th>
<th>Final Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Better understanding of interaction between soil type and applicability of no-till</td>
<td>6</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>2. Less herbicide dependent weed control through improved crop</td>
<td>7</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>rotations and residue management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Machinery adaptation/improvement to handle crop residues and/or variable soil moisture conditions</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4. Long-term and participatory research approaches with regard to both tillage reduction and the effect of mulching</td>
<td>7</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>5. Economic assessment of tillage and mulching systems</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>6. Long term economic benefits of SOM improvement</td>
<td>8</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>7. Assessment of the effect of irrigation on SOM dynamics</td>
<td>6</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>(Higher biomass and its management vs higher SOM mineralization)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Optimization of biomass/crop/cover crop production to contribute to SOM improvement under irrigation</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>9. Interaction between SOM, crop rotation, inputs’ efficiency and yields under conservation agriculture</td>
<td>8</td>
<td>12</td>
<td>26</td>
</tr>
</tbody>
</table>
Group 3 - Biology: crop management + application of bioeffectors and microbial inoculants + soil biological quality assessment

<table>
<thead>
<tr>
<th>Topic</th>
<th>GROUP SCORE</th>
<th>FARMERS SCORE</th>
<th>Final Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Research for crops combining increased residues and SOM while maintaining the income (crop yield/quality)</td>
<td>6</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>2 Optimization of bioeffector treatments with proper application (carrier materials, time and technique of application...)</td>
<td>7</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>3 Development of monitoring techniques for evaluating how bioeffectors are functioning</td>
<td>9</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>4 Methods and techniques of application of beneficial microorganisms during the vegetation period</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>5 Testing the effect of microbial inoculants with different soil types (physical and chemical characteristics)</td>
<td>7</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>6 Spatial and temporal variability of soil biological activity for different crops</td>
<td>6</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>7 Improvement of synergism of combined use of bioeffectors</td>
<td>9</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>8 Development of simple techniques to self-check soil (biological) quality on a farmer’s level</td>
<td>6</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>9 Advisory system with modern “up to date” detection methods to follow more specific changes of soil biological properties</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>10 Use of endogenous biological resources that are “site specific” as possible tool to enhance the microbial efficiency for C storage in soil (and biodiversity)</td>
<td>8</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>11 Intercropping and proper crop management to improve soil life and SOM</td>
<td>8</td>
<td>12</td>
<td>30</td>
</tr>
</tbody>
</table>
### Group 4 - Technology: SOM measurement/monitoring techniques

<table>
<thead>
<tr>
<th>Topic</th>
<th>GROUP SCOR</th>
<th>FARMERS SCOR</th>
<th>Final Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Local Mediterranean SOM reference values related to soil types and functions (Carbosol model). Indicators to assess and monitor soil functioning (e.g., C sequestration)</td>
<td>9</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>2 Calibration/Validation of existing C balance models in Mediterranean regions</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>3 Standardize C analysis methods; pedotransfer functions to correlate data; metadata on methods of analysis &amp; sampling. Data assimilation &amp; integration of existing databases. Setting up common methods to analyse SOM quality and SOM fractions (for SOM and exogenous organic C sources).</td>
<td>9</td>
<td>11</td>
<td>26</td>
</tr>
<tr>
<td>4 Collect NIRS (Near Infrared Reflectance Spectroscopy) libraries and chemometry (for SOM and exogenous organic C sources). Integration of proximal and remote sensing data for spatialization.</td>
<td>9</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>5 Fate of SOM input in soils from different sources (emissions, sequestration, leaching, erosion...)</td>
<td>7</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>7 Novel methodologies to assess soil bulk density (as needed for C stock; as a soil quality parameter). Novel sensing technologies (geophysical, radiometric...). SOM quality fingerprinting</td>
<td>9</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>8 Relationships between SOM components (for SOM and exogenous organic C sources) and soil functions (deterministic/stochastic models)</td>
<td>5</td>
<td>3</td>
<td>13</td>
</tr>
</tbody>
</table>
Annex 4: List of the most relevant topics for further research

**Group 1 - Carbon resources: application of C-rich inputs** (Total 10 topics – full list in Annex 3)
- Manure application
- Plant residues
- Domestic resources / food waste composts
- Standards for manure inventory

**Group 2 - Management: tillage + irrigation + mulching** (Total 9 topics – full list in Annex 3)
- Less herbicide dependent weed control through improved crop rotations and residue management
- Long-term economic benefits of SOM improvement
- Assessment of irrigation dynamics of SOM
- Interaction between SOM, crop rotation, input efficiency and yields under conservation agriculture

**Group 3 - Biology: crop management + application of bioeffectors and microbial inoculants + soil biological quality assessment** (Total of 11 topics – full list in Annex 3)
- Research for crops combining increased residues (to increase SOM) and income
- Developing monitoring techniques to study how the bioeffectors are functioning
- Intercropping and proper crop management to improve soil life and SOM: which combination is better
- Developing simple techniques to self check soil quality on a farmer's level

**Group 4 - Technology: SOM measurement/monitoring techniques** (Total of 8 topics – full list in Annex 3)
- SOM reference values related to soil types and functions (C model)
- C analysis standards and databases
- Collect NIRS libraries and chemometry
- Techniques for studying the fate of SOM inputs in soils, from different sources
Annex 5: Conducting collaborative research projects

Topic - Manure application: machinery, decision support services, precision agriculture, GPS & sensors, novel techniques

Resources: Pig, dairy, poultry, beef and compost. Horticulture, fruit crops, pastures and field crops.

1. Identify the problem. Survey, problems and expectations.
2. Literature review and field experience. Involve commercial network of farms.
3. Propose participatory research on long term. Apply for money.
4. Field treatments: Control; Nitrate Directive, etc. Get results.
5. Dissemination of results (yields/economics/scientific) in farmers’ network, other groups, schools, through web pages, movies, scientific and extension publications.

Topic - interaction among soil organic matter, crop rotation inputs efficiency and yields under conservation agriculture systems

1. Create a network of Conservation Agriculture (CA) farmers, including successful pioneers in CA.
2. Identify stakeholders: farmers (majority and decision-making), advisors, researchers, farmer organisations, public/private sector, NGOs.
3. Indicators to be monitored: Management practice, yield, SOM, inputs (energy, labour...), optimize profit margin per hectare; crop rotation and biodiversity indicators.
4. Communication-Extension plan: dissemination, discussion groups, training courses and practical guides.

Topic - intercropping and proper crop management to improve soil life and SOM

1. Database needs on:
   - Potential intercrops; Crop management; Environmentally friendly crops and methods;
   - Technology available?; Needs demonstration fields (for farmers), Learning step by step!
2. Risk assessments needs!
   - Funding investigation/prices/grants/weather!
   - Cooperation with researchers for monitoring soil quality
   - Machinery techniques
   - Register different opinions! Problem recognition! Generation (younger vs older farmers) problems! (How to deal with that?)
3. Suggestions
   a. Experimental farms (with and without residues)
   b. Funds/technical support
   c. Discussion between farmers and researchers
   d. Co-financing by stakeholders
   e. Interrelations with other sectors (machinery and fertilizer producers)
   f. Capability combination with other interests (actors)
4. Upscaling
   a. From local to broader level
   b. Model (put together) - Farmer - Environment. Use farmers’ language!!
Topic - Local, Mediterranean SOM content references related to soil types, ecosystems and functions, including indicators of soil functions

1. Build a group formed by stakeholders related to the considered soil services & ecosystems.
2. Involve a network of farms/sites representative of different soil services & ecosystems, where SOM plays a role.
3. Use and improve existing tools: gathering, comparing, testing, calibration (Models, databases).
4. Translation of results and guidelines into the language of farmers.
Annex 6: Existing collaborative projects presented by experts

Jérôme Balesdent
- “Le Compostage ...” leaflet on composts (for/by users and producers)
- PROTypo: project for typologies of organic residues
- Project Echo-MO (in French) network media
- Carbosoil: project in Spain
- FATIMA: project proposal for H2020 (submitted)

Filipe Marques
- Showing his own experience in his farm and the changes introduced: crop rotation, crop residues and manure application / conservation agriculture

Edoardo Costantini
- SOILPRO: LIFE project comparing conventional farming with organic farming (www.soilpro.eu)

Jaume Lloveras
- Long-term (10 years) evaluation of the effects of pig slurry and cow manure application on SOM and soil quality

Sideris Theocharopoulos
- ARIDWASTE: project in Greece (www.aridwaste.gr)
- oLIVE CLIMA: project on full recycling of wastes and by-products from the olive orchard as an example of a self-sustainable crop (http://www.oliveclima.eu/en/)

Dimos Anastasiou
- Own farm project on introducing conservation agriculture in tree orchards
- ADAGIO: Adaptation and mitigation options of agriculture to climate change, which share common ground with strategies and agricultural practices to increase SOM and SOC in Mediterranean soils (www.adagio-eu.org)

Avraam Mavridis
- Guarden: project for developing curricula courses for farmers and others to become guardians of the environment (http://www.guarden.eu/)

Jacques Neeteson
- Effects of soil management on crop productivity, climate change mitigation and soil quality (CATCH-C). 7-FP (http://www.catch-c.eu/)

Helena Gomez Macpherson
- Permanent beds and controlled traffic in irrigated maize-based systems.
- Conservation agriculture effects at watershed scale
Maria Teresa Dell'Abate

- MO.NA.CO.: Italian project on cross-compliance monitoring, including specific measures to increase or protect SOM in agricultural soils, (www.progetto-monaco.it)
- EFFI.COND.: Italian project (closed) aimed to identify specific indicators of cross-compliance standard effectiveness, included many on SOM protection, (www.reterurale.it)
Annex 7: Potential projects for Operational Groups based on problems raised by practitioners (among the experts during the third break-out session) - results and key points

Group 1 - Diagnosis procedure and recommendations for SOM management; tools needed for measuring and evaluating the SOM content

*The need from practice:* in an irrigated area, a practical tool is needed to be used directly in the field to support decision-making.

*Partners:* advisors of one company; farmers; researchers.

*Duration:* more than 3 years.

*Activities:*

a. Definition of the problem: diagnosis procedure is needed
b. Identification of useful tools:
   i. Analytical methods (wide range of methods)
   ii. Remote Sensing methods
   iii. Simple indicators
c. Design of the diagnosis procedure to be evaluated
   i. Different commercial farms
   ii. Similar scenarios
   iii. Previous selection of useful tools (cost, time...). Dialogues between advisors and researchers.
d. Evaluation of the designed diagnosis procedure during a cropping season
e. Selection of the best tools and definition of the best diagnosis procedure (cost, time, effectiveness)
f. Make recommendations for management practices to be applied in these commercial farms
g. Validation of the selected diagnosis procedure in commercial farms during another season and implementation in the working routine of the team of advisors of the company.

Group 2 - Optimize the use of fertilizers and pesticides in conservation agriculture; how to reduce costs while maintaining results (crop yield/quality)?

*The need from practice:* A Portuguese network (Évora District) of on-the-farm trials for "lowest input" in conservation agriculture acts based on the objective of closing the cycle of the elements (C,N,P and K) through appropriate management.

*Actors:*

- Regional services and freelance professional
- Farmers’ network (singular as associated)
- Analytical lab (soil and plant) for yearly indicators of nutrient status (monitoring)
- Advice regional service for soil and climate conditions
- Economist (mediation of long-term economical value)
- Agronomist (setting up the experiments) + crop system modelling
Group 3 - Identify the best crop rotation to improve SOM in the context of cereal-based systems (conservation agriculture in irrigated conditions)

The need from practice: how to select the best third crop in a maize-wheat-third crop rotation in order to improve profits, while achieving better weed control, better pest and disease control and optimization of SOM.

Actors:
- Farmers: contributing with expertise and managing experimental fields: supplying machinery, farm operations
- Farmers’ organisations and farm advisors: discussion; promote dissemination
- Scientists:
  a. Set up of experiments taking into account the specifications of the on-farm available machinery
  b. Supervision/involvement of the experimental work (at all the steps)
  c. Discussion inside the group about results and interpretation of the results

Group 4 - Organic resources from tree-based cropping systems

The need from practice: Branches, cuttings and all organic material from tree crops are sometimes transported offsite or burnt. Tree cropping (orchards) is frequent in large areas in Mediterranean regions. How to use them to increase the SOM? Estimation of available SOM and carbon stock on tree orchards could provide useful insights to future management, and an optional component of this proposal is to use existing soil survey data and sensing methodologies towards SOM or SOC estimation for a pilot area.

Objective: Develop a cost effective way for farmers to incorporate tree residues on-site.

Actors: Farmers; Private sector (Biomass); Service providers; Agronomists

Dissemination (points of contact): Local Agricultural Agencies

Links to: Water Directive Framework, Kyoto protocol (C sequestration to mitigate climate change), Carbon Balance (in-out), Soil biodiversity

How to estimate biomass produced per farms (registry + inference)

Alternative: Use large dimension for pellets or biomass production. Can be linked to:

a. Research project on soil spectral analysis
b. Conservation agriculture, Cover crops, Organic farming, no-plow.
c. Increase biodiversity + SOM
d. Cost efficient SOM production
e. Reduce erosion through mulching
Annex 8: List of additional, potential topics for Operational Groups

• Defining SOM origin and quality: dependence of organic matter quality on origin of composting (bacteria, fungi...);
• Benchmarking for SOM;
• Shifting to conservation agriculture;
• Assessment and technical recommendations of conservation agriculture practices in perennial crops;
• Economic evaluation of conservation agriculture practices in perennial crops;
• Organic animal production and horticulture: more integration, how can they be better connected?
• Vegetable crop and organic matter management: how to change, what alternatives?
• Irrigation: water quality, re-use of treated waste water, reducing negative impacts;
• Biomass production: energy crops and SOM content;
• Application of microbial inoculants to soils to accelerate organic carbon production;
• Carbon footprint and environmental certification of good practices related to SOM by farmers, to be known/recognised by consumers (labelling);
• Economic evaluation for carbon footprint / environmental certification;
• Biochar and SOM.
Annex 9: Focus Group meeting agenda

<table>
<thead>
<tr>
<th>Time start</th>
<th>Time end</th>
<th>Duration (min.)</th>
<th>PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00</td>
<td>13:00</td>
<td>60’</td>
<td>Lunch at hotel</td>
</tr>
<tr>
<td>13:00</td>
<td>13:10</td>
<td>10’</td>
<td>Welcoming words, expectations from FG second meeting  <em>Silvia Dietz (DG AGRI)</em></td>
</tr>
<tr>
<td>13:10</td>
<td>13:20</td>
<td>10’</td>
<td>Introduction to the Agenda, <em>Jorge Blanco (EIP-Agri Service Point)</em></td>
</tr>
<tr>
<td>13:20</td>
<td>14:00</td>
<td>40’</td>
<td>Introduction to the results of “homework and MPs” prepared by participants and Grid analysis, <em>Philippe Hinsinger (Coordinating Expert of the Focus Group)</em>. Discussion and comments.</td>
</tr>
<tr>
<td>14:00</td>
<td>16:30</td>
<td>150’</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; break out session Needs for Research and Interactive projects?</td>
</tr>
<tr>
<td>16:30</td>
<td>17:00</td>
<td>30’</td>
<td>Coffee-break</td>
</tr>
<tr>
<td>17:00</td>
<td>19:00</td>
<td>120’</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; break out session How to develop further cooperation models in the areas previously identified?</td>
</tr>
<tr>
<td>19:00</td>
<td>19:20</td>
<td>20’</td>
<td>Conclusions of day 1 and short introduction to day 2, Philippe Hinsinger and Jorge Blanco</td>
</tr>
<tr>
<td>19:20</td>
<td>20:00</td>
<td>40’</td>
<td>Free</td>
</tr>
<tr>
<td>20:00</td>
<td>22:00</td>
<td>120’</td>
<td>Joint dinner at hotel</td>
</tr>
</tbody>
</table>

**Day 2**

<table>
<thead>
<tr>
<th>Time start</th>
<th>Time end</th>
<th>Duration (min.)</th>
<th>PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>08:40</td>
<td>10’</td>
<td>Introduction day 2</td>
</tr>
<tr>
<td>08:40</td>
<td>09:30</td>
<td>50’</td>
<td><strong>Plenary session:</strong> Presentation by Experts about existing examples of projects in different areas identified. Results and key points for success.</td>
</tr>
<tr>
<td>09:30</td>
<td>11:30</td>
<td>120’</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; break out session Suggest ideas for projects for Operational Groups and other forms of cooperation with the objective of testing new methods for improving soil organic matter content</td>
</tr>
<tr>
<td>11:30</td>
<td>12:00</td>
<td>30’</td>
<td>Coffee-break</td>
</tr>
<tr>
<td>12:00</td>
<td>12:30</td>
<td>30’</td>
<td>Dissemination activities</td>
</tr>
<tr>
<td>12:30</td>
<td>13:00</td>
<td>30’</td>
<td>Conclusions of the meeting, next steps and closure</td>
</tr>
<tr>
<td>13:00</td>
<td>14:00</td>
<td>60’</td>
<td>Light lunch</td>
</tr>
<tr>
<td>14:00</td>
<td></td>
<td></td>
<td>Departure to the airport</td>
</tr>
</tbody>
</table>

Annex 10: Presentation of the concept of Operational Groups

(see separate document, i.e. slides of the presentation given by Silvia Dietz / DG-AGRI, as attachment)