

Report small meeting WG3, COST 869, 2-4 December 2009

Fac. Bio-ingenieurswetenschappen, Coupure Links 653, Gent, Belgium

Topic: Update of the factsheets and preparation of the meeting in Israel.

Attendees	
Oscar Schoumans	Netherlands
Marianne Bechmann	Norway
Wim Chardon	Netherlands
Chantal Gascuel	France
Georges Hofman	Belgium
Brian Kronvang	Denmark
Iggy Litaor	Israel

Paul Newell Price (UK) and Gitte Rubaek (Denmark) could not be present.

Agenda

1. Welcome, agenda
 2. Discussion on the status of the factsheets
 - 1.1 - General nutrient application management (Hofman)
 - 1.2 - Manure production and application management (Schoumans)
 - 1.3 - Manure surplus management (Chardon)
 - 1.4 - Inorganic fertilizer application management (Hofman)
 2. Crop management (Rubaek via Chardon)
 3. Livestock management (Chardon)
 4. Soil management (Bechmann)
 5. Water management (Schoumans)
 6. Land use change (Gascuel)
 7. Land infrastructure (Gascuel)
 8. Measures in surface water (Kronvang)
3. Discussion, reporting factsheets, article
 4. Web-based tool
 5. Final actions to be discussed
 6. Close

Ad 1. Welcome, agenda

The agenda was accepted as proposed.

Ad 2. Discussion on the status of the factsheets

1.1 - General nutrient application management

Hofman noticed that most factsheets deal with P, and much less with N. Also, there is a lot of overlap between factsheets, and a proposal will be made to combine a number of them.

The factsheet about using a P index could be mentioned in an introduction to the factsheets about options. The P index is not a mitigation option but a tool for finding locations where mitigation options could be applied. At present it is not clear from the title if the index only deals with surface runoff or also with subsurface runoff / leaching, and a unit (30 kg P or P₂O₅ ha⁻¹) should be added under *Effectiveness*.

The SERA-17 texts about Phosphorus balance and Phosphorus sources, application timing, and methods can be used for in introduction text for this group of factsheets. With P mining, addition of N+K is not always necessary, at least not on short-term.

Following some fertilizing recommendations may lead to a large surplus of P, especially with crops that need a high P status for growth.

1.4 - Inorganic fertilizer application management

A remark should be added to the factsheet Reduce P content of common NPK fertilizers that this is specific for some countries, where only a (very) limited number of different fertilizer types (NPK-ratio's) is available. In other countries it is since long common that NPK fertilizers with a low P content are available for farmers.

1.2 - Manure production and application management

The factsheets about batch storage of slurry and solid manure can be combined. A new factsheet will be written based on SERA-17 BMPs on treating poultry litter and swine manure for P immobilization and reducing NH₃ volatilization.

The factsheets about spreading farmyard manure / slurry at high-risk times can be combined with factsheet about inorganic fertilizer, and can be placed under 1.1. The same can be done with the factsheets about application at high risk areas.

It is not clear if the factsheet about Incorporation of manure also discusses other techniques for reducing NH₃ emission, e.g. applying manure below the grass, directly on the soil, or in slots made in grassland soil.

1.3 - Manure surplus management (Chardon)

Information about incineration of livestock manure can be added to the factsheet about Incineration of poultry litter.

One new factsheet can be written based on a SERA-17 BMP on Physical manure treatment (solids separation), which makes transport cheaper. Gascuel will look for a person who is involved in the Transport of manure for writing a factsheet.

Much work is done in The Netherlands on recycling nutrients and on methane production from manure, Schoumans will write a factsheet about it.

2. Crop management

Information about Catch crops during two years after plowing of permanent pastures can be added to the existing factsheet on catch crops. The same could be done with Growing grass in between maize rows.

The option of Choosing crops with a higher P-uptake should be covered by the factsheet on P mining. For crops with a higher N-uptake Bechmann will ask Chr. T. Christiansen (DK) if he has information about this.

Chardon will ask if someone from NL can write a factsheet about Removing crop residues after harvest.

Chardon and Bechmann will write a factsheet on: Choose crops that are less sensitive for surface runoff.

Bechmann will check if information is available for a factsheet about Strip cropping to avoid wind erosion.

3. *Livestock management*

The two factsheets on resp. Optimizing stocking rates and Optimizing soil organic matter content must be summarized into shorter factsheets, with a link to the extended versions.

Two new factsheets were written about animal feeding (resp. for dairy and pigs). However, the factsheet on pig feeding is also too long and will be summarized after which Kronvang will do a review.

Chardon will write one factsheet on Grazing management, that will be based on info from a SERA-17 BMP and paragraphs from the UK-report (nr 14, 15, and 16); help will be asked from Aarts (NL).

The environmental impact of holding pigs outdoors was studied by Heckrath (DK); Bechmann will ask him if he can write a factsheet about this. Also in the UK outdoor pigs are common.

4. *Soil management*

A publication about soil management was written by Ulén et al.; for this, a number of factsheets have been rewritten and/or combined. The factsheets will be placed under new subgroups, and the current introduction texts will be used for a chapter in the report to be written (see below).

5. *Water management*

The principle of Intake of surface water was interpreted incorrectly; Bechmann will look for a standard drawing. The boxes are meant for leading surface runoff water to a tile drain, in order to prevent water erosion downhill; they are thus not meant for stimulating sedimentation.

A factsheet still has to be written about Controlled surface water level; Litaor has information about this, in press in J. Hydrol.

A new factsheet must be written about Increasing the water level in peat soils; this is not covered by existing factsheets.

Gascuel will ask colleagues from CEMAGRAF if they can review factsheets on Water management.

6. *Land use change (Gascuel)*

Two subcategories will be created, on resp. Land use re-location and extensification. A chapter will be written by Gascuel, Kronvang will assist with reviewing.

7. *Land infrastructure (Gascuel)*

The text (factsheet) about Delineate the functional hydrographic network is not a mitigation option but a tool, and will be used for the chapter in the report.

One factsheet will be written combining the topics: Farm track sediment traps and Disconnect farm infrastructure from sewerage or surface water. For this, Blum (CH) will be asked, and Dutch experience with this will be used.

8. Measures in surface water (Kronvang)

The text (factsheet) about critical levels and critical loads will be used for the general introduction to the COST action in the report.

A factsheet about dredging must be written, Schoumans will ask De Klein, Kronvang will do the review. De Klein will also be asked to review other factsheets dealing with surface water.

Factsheets on restoration of bogs, fens and wetlands will be written by Kronvang, and reviewed by Litaor and Gascuel.

Stamm (CH) will be asked for information about sedimentation ponds; research was done in CH on this by J. Blum and M. Reinhardt.

The topics now mentioned under 9. Options for abating consequences of eutrophication in surface water will be placed under (new) subcategory 8.4. Several topics will be combined and 3 factsheets will be written.

Ad 3. Discussion, reporting factsheets, article

It was decided to keep the factsheets on the website so they remain accessible for everybody and can be updated when necessary.

The Excel file containing all topics for factsheets will be updated by Chardon and distributed among the participants.

On the website, links to the descriptions of Best Management Practices produced within the SERA-17 network will be separated from the list with factsheets, in order to avoid confusion with factsheets, because they often refer to USA practices (e.g. non s.i. units).

It was decided to write a book, with an introduction chapter about COST 869 and WG3, and with separate chapters (4-11, see below) on the 8 categories of options that were defined. All factsheets that are available on the moment of publication will be included in an appendix.

The book could be published via the COST office, and will also be available as a pdf via our website. The table of contents of the book will be as follows:

- 1 Introduction COST action (Chardon; 2 p)
- 2 Objectives of WG3: Evaluation of mitigation options (Schoumans; 1p)
- 3 Conceptual framework, pathways, grouping of FS, useful tools (balance and P-index) (Schoumans / Gascuel / Litaor; 8 p.)
- 4 Nutrient Management (Newell Price / Hofman / Chardon; 20 p total)
 - 4.1 General nutrient application management (Newell Price / Hofman)
 - 4.2 Inorganic fertilizer application management (Newell Price / Hofman)
 - 4.3 Manure production and application management (Newell Price / Chardon)
 - 4.4 Manure surplus management (Chardon / Newell Price)
- 5 Crop management (Rubaek; 5-8 p)
- 6 Livestock management (Chardon / Aarts / France?; 5-8 p)
- 7 Soil management (Bechmann / Ulén / Strauss; 5-8p)
- 8 Water management (Schoumans / Delgado / Bechmann; 5-8p)

- 9 Land use change (Gascuel / ?; 5-8p)
- 10 Land infrastructure (Gascuel / Dorioz / Kronvang; 5-8p)
- 11 Measures in surface water (Kronvang / Litaor / Stamm; 5-8p)
- A1. Appendix (Updated version of all factsheets)

For writing the report, two papers that will soon be published or submitted can be used as background material: a paper by Ulén et al. about soil management (Geoderma, resubmitted), and a paper by Gascuel et al. about land infrastructure (in preparation).

When the report is finished, a scientific publication about the database with factsheets can be derived from it. Since it will not contain original results, it will not be easily accepted by many journals, so an appropriate journal has to be selected. However, when a tool is developed that makes it possible to select factsheets from the database for a specific situation the chance of acceptance will probably strongly increase.

Both a book and a publication can be useful for getting our work on the agenda of FP7.

Ad 4. Web-based tool

Litaor gave an introduction on the use of a decision-tree approach* for selecting mitigation options / factsheets that are relevant for an end-user of the database we are creating. For the use of such an approach, all options have to be characterized by data that indicate under which conditions an option is applicable and / or effective. It was decided that all will fill in an Excel file with criteria for each option within the category one is responsible for. A first version of the Excel file lead to some discussion, an updated version will be distributed by Schoumans.

- see e.g. Litaor et al. DOI:10.1029/2007JG000419 and DOI:10.1016/j.jhydrol.2007.11.007, both 2008, for examples of the use of a decision tree)

Ad 5. Final actions

It was agreed upon that a first draft of all chapters of the report will be written before 15 January, which will be distributed, and before 21 January a second draft. The final versions will be read and commented by all before the meeting in Israel on 24-26 February 2010.