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Background

The 2013 HELCOM Ministerial Meeting agreed to promote and advance towards applying by 2018 at the latest annual nutrient accounting at farm level taking into account soil and climate conditions giving the possibility to reach nutrient balanced fertilization and reduce nutrient losses at regional level in the countries.

Germany has taken the lead together with Denmark to coordinate work towards fulfilling the ministerial commitment.

The attached document contains the conclusions of the HELCOM Workshop on status of nutrient bookkeeping in the Baltic Sea countries, which was held on 28-29 April 2015 in Oldenburg, Germany. The workshop was organized by the Chamber of Agriculture Lower Saxony and the Federal Environmental Agency in Germany and chaired by Mr. Dietrich Schulz, Federal Environment Agency in Germany, and Ms. Anette Pedersen, Danish Ministry of Environment. The workshop was a first step for stocktaking of the ongoing activities related to the nutrient accounting at farm level in the Baltic Sea countries.

Further information on the workshop and presentations from the workshop can be found on the [HELCOM web page](#).

Action required

The Meeting is invited to take note of the conclusions and give comments and proposals on how to proceed in this matter.

Contracting Parties are invited to make use of the scientific and administrative contacts (bilateral or multilateral) established at the workshop for their national activities in implementing the ministerial commitment from 2013 to introduce nutrient bookkeeping on farm level by the year of 2018.

Contracting Parties are also invited to provide additional information, if considered necessary, on the status of nutrient bookkeeping in their respective country to the organizers of the workshop (Amelie Bauer, amelie.bauer@lwk-niedersachsen.de, Chamber of Agriculture of Lower Saxony).



CONCLUSIONS

HELCOM Workshop on status of nutrient bookkeeping in the Baltic Sea countries

28-29 April 2015, Oldenburg, Germany

Introduction

The HELCOM Workshop on status of nutrient bookkeeping in the Baltic Sea countries was held on 28-29 April 2015 in Oldenburg, Germany. The workshop was organized by the Chamber of Agriculture Lower Saxony and the Federal Environmental Agency in Germany and chaired by Mr. Dietrich Schulz, Federal Environment Agency in Germany, and Ms. Anette Pedersen, Danish Ministry of Environment. The Program of the workshop can be found attached (Annex 1).

The aim of the workshop was to identify the status of the nutrient bookkeeping and balance calculations in the Baltic Sea countries and to exchange experiences and ideas for the benefit of the work in the countries, including potential development of policy and other possible instruments on nutrient bookkeeping.

The workshop was attended by representatives of Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden as well as WWF. The list of participants can be found attached (Annex 2).

In addition to these conclusions from the workshop, workshop proceedings will be prepared as a collection of papers by the speakers of the workshop on the status of nutrient bookkeeping in the respective countries. The proceedings are expected to be published in autumn 2015.

Presentations from the workshop have been made available on the [HELCOM web page](#).

Background

Sustainable agricultural production is a key to the success of reaching a healthy Baltic Sea. Effective nutrient management can bring opportunities for better addressing nutrient losses to the sea.

The Baltic Marine Environment Protection Commission, usually referred to as [HELCOM](#), is an intergovernmental organization of the nine Baltic Sea coastal countries (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden) and the European Union working to protect the marine environment of the Baltic Sea from all sources of pollution and to ensure safety of navigation in the region. Since 1974, HELCOM has been the governing body of the 'Convention on the Protection of the Marine Environment of the Baltic Sea Area', more commonly known as the [Helsinki Convention](#).

The Baltic Sea countries agreed at the 2013 HELCOM Ministerial Meeting to promote and advance towards applying by 2018 at the latest annual nutrient accounting at farm level taking into account soil and climate conditions giving the possibility to reach nutrient balanced fertilization and reduce nutrient losses at regional level in the countries.

The [HELCOM Group on Sustainable Agricultural Practices](#) provides a platform for agri-environmental policy measures and instruments and joint discussion on the Baltic agriculture in the context of the protection of the marine environment, in order to address nutrient inputs and emissions from agriculture. Germany has taken the lead together with Denmark to coordinate work towards fulfilling the ministerial commitment.

Status of nutrient bookkeeping in the Baltic Sea countries

The status of nutrient bookkeeping in the Baltic Sea countries was presented by national experts as listed in Annex 2. Below are some highlights from the presentations. The presentations have been made available on the HELCOM web page and more extensive information will be found in the workshop proceedings, which are expected to be published in autumn 2015.

Denmark: Denmark has the most advanced system for nutrient bookkeeping in the Baltic Sea region as it integrates fertilization planning and annual accounting of nutrients at the farm level. National regulations are in place. It is a state run system with farm registration, reporting, inspection, as well as standards for nutrients in manure, crop demands and soil types. Fines are charged to farms exceeding nutrient application limits. Other economic tools such as tax free trade of fertilizers free within the application limit exists.

Estonia: There is no legal obligation for calculating nutrient balances. Registration of input of fertilizers as well as of yields is mandatory on field level. Holdings over 300 livestock unit with liquid manure are obliged to prepare three year fertilization plans. Such plans are approved by the Environmental Board. The Legal Act regulates registration of fertilizer input but there is no centralized database. Estonia has negative national level phosphorus balance. Grassland yields are not monitored, which is one of the obstacles for nutrient balance calculations. Advisory service needs to be developed to offer nutrient balance calculation support to farmers.

Finland: The implementation of the Nitrates Directive (NiD) demands that nutrient input and yield level must be documented in field books. The maximum crop specific nitrogen application levels are also regulated. If the farmer participates in the agri-environment scheme more detailed documentation is needed and the allowed nitrogen levels are lower than in the NiD. Besides N, also P levels are regulated. Farmers can use results of nutrient analysis or the standard values (new tables available) e.g. for manure. According to agri-environment scheme farmers have to make also a cultivation plan every year. Nutrient balances are not mandatory. The Advisory service has a key role to enhance nutrient balances.

Germany: A national legal framework regulating mandatory calculation of surface balances on farm level is in place. Planning is mandatory but there is no standardised documentation. Changes in the legal framework, which are expected in 2016, will introduce mandatory farm gate balance by 2018, registration of manure exports from farms and lower nutrient surplus targets. For the exceeding of surplus targets a financial punishment will be introduced. Additionally a rough fertilizer planning will be mandatory in the future. Furthermore the federal states of Germany will be empowered to induce even stricter legislation for endangered regions.

Latvia: There are no strict requirements for farmers to calculate nutrient balances systematically nor for reporting but elements are included in different regulatory systems. Farms over ten animal units (five in the vulnerable zone) are to record all livestock wastes and to keep the records for three years. The farmer can choose to use normative values or values based on laboratory tests on manure samples for manure composition calculations. Fertilization plans are obligatory for farms inside NVZ if they operate on agricultural land larger than 20 ha (field crops) or larger than 3 ha (potatoes, vegetables, orchards) and they should also maintain the records of field history (for every field of farm) and keep them for at least three years. These farms should also keep the records about obtained mineral fertilisers and its chemical composition (at least NPK content).

Lithuania: The whole Lithuanian territory is designated as a nitrate vulnerable zone (NVZ). Nutrient balance calculations are not obligatory in Lithuania. Some farmers have participated in projects but the interest towards voluntary nutrient calculation balances is low due to the many assumptions which need to be

made. Fertilization plans are obligatory for farms fertilizing organic fertilizers over 50ha of agricultural land while it is voluntary for other farms. New regulation from 2016 onwards is expected for farmers participating in the Rural Development Program for ecological farming to calculate nutrient balance on farm level. New methodology is under preparation.

Poland: Fertilization plans are obligatory for the entities that breeds poultry in the amount of over 40 000 posts or breeding pigs in the amount of over 2 000 posts for pigs weighing over 30 kg or 750 posts for sows, for the buyers of natural fertilizers sold from the entities mentioned above as well as for farms in nitrogen vulnerable zones (NVZs) bigger than 100 ha and for farmers in the agri-environmental schemes and via cross-compliance. Changes to the Polish area of NVZs is under consideration. The implementation of the plan is the matter of environmental inspection. There have been good results of recent public promotion campaign on nutrient management coordinated by the Polish Ministry of Agriculture and Rural Development. Moreover, economic drivers are important for the farmers as they try to reduce expenses for mineral fertilization which is quite costly in Poland (55% of the total number of Polish farms are small farms – between 1-5 ha).

Russia: Nutrient accounting is mainly used by the state authorities for the purposes of soil protection. Field balance is used by the regional authorities for assessment of nutrient application and correlation of the agricultural land and manure produced by animal farms. Within a project gate balance was calculated for model animal farms based on statistical data and nutrients surplus was estimated as 40-60 kg nitrogen and 10-20 phosphorus. Application of manure by the large industrial farms is a subject of state environmental surveillance.

Sweden: Nutrient accounting based on farm gate nutrient balance is voluntary for farmers in Sweden but can be mandatory if being part of environmental permit. In the NVZ the development of fertilization plans is obligatory for nitrogen fertilization. The major obstacle for nutrient accounting is uncertainty of standard values used as input parameters. National ordinance regulates annual rate of manure application, its storage, application period etc. In the whole country mandatory phosphorus balance between amount of animals and agricultural land area should be calculated for the farms with more than ten animal units. The limit is 22 kg phosphorus per hectare and per year in average for the whole available spreading area.

Conclusions

Based on the presentations made and the discussions during the workshop the following conclusions were made.

The main obstacles for promotion of nutrient bookkeeping in the Baltic Sea region are:

- insufficient/missing data on production and consumption quantity,
- uncertainties of standard values on manure excretion, uptake of crops, grassland yields and nutrient content in manure as well as data on nitrogen fixation, denitrification, leaching under different conditions etc.,
- differences in used methodologies for assessment of nutrient surplus – need for unified or at least comparable methodology in order to follow progress towards target values,
- lack of awareness among farmers on advantages of nutrient accounting in farm management,
- low level of cooperation and engagement of involved authorities, institutions and professional associations,
- undeveloped legal framework regulating nutrient management and control of nutrient flows in agricultural production processes.

Drivers for promotion of voluntary nutrient bookkeeping can be economic, as e.g. costly mineral fertilizers can be replaced by free animal manure, and the aim for sustainable agricultural production. Sound scientifically based knowledge, instead of assumptions and declarations, will help in promotion of environmentally friendly nutrient management through communication with public/media.

The experts identified and prioritized the following steps for promoting nationally nutrient bookkeeping:

- development of methodology and equipment for simple and quick methods to analyse nutrient content in manure in the field,
- ensure that proper advisory services to farmers on e.g. fertilization plans, nutrient accounting and training are in place,
- improvement of data collection on crops and also combining of existing data,
- improvement of national reporting systems on fertilization plans and on the actual nutrient balance through establishing or developing existing national databases. Also national web based services assisting nutrient bookkeeping and reporting could be developed,
- educational and public awareness campaigns to inform on the advantages of nutrient bookkeeping to make it attractive for the farmers.

The following priorities for implementation in the coming 1-2 years were identified:

- stocktaking and harmonization of the standard values for manure excretion, nutrients content in manure, crop uptake and the others.
- finding concepts for monitoring farm level bookkeeping and balances to be used for regional nutrient balances and to identify hot spots.
- increase of education and awareness (e.g. material for teachers) at all levels

The experts also saw a need for regional cooperation in promoting and advancing nutrient bookkeeping in the Baltic Sea region by:

- establishing dialogue between regions with similar environmental and economic conditions, for example concerning intensity and character of agricultural production, size of farms, mandatory/voluntary management systems etc., which could learn from each other,
- seeking for methods for measuring nutrient surplus based on field balance depending on soil type, which can be recommended for use in the region,
- a list of best regional practices, which could be used as a pick-up list for promotion of nutrient bookkeeping,
- need for common methodology/unification of methodology for calculating nutrient balances for all countries but based on national factual figures,
- need for common understanding of terminology used (accounting, bookkeeping, balancing, planning).

Final remarks

The workshop identified the status of nutrient bookkeeping and balance calculations in the Baltic Sea countries, highlighted methodological difficulties and outlined the needed steps to be able to reach the commitment to have nutrient accounting at farm level at the latest by 2018.

Nutrient bookkeeping is a tool for documentation of the nutrient flows at the farms. It also integrates planning of fertilization, calculation of the nutrient balances and reporting the data for aggregation at local

and national level, which forms a background for sustainable use of nutrients in various types of agricultural production. Excessive use of nutrients not only indicates a risk of losses to the environment but also represents a substantial financial loss for farmers. Better data collection and databases will inform farmers as well as relevant authorities and scientists on possible losses and initiate actions aimed at their minimizing at different levels

There is a high level of diversity in the nutrient management systems in the region. In some countries nutrient bookkeeping tools are introduced and implemented only within the NVZs, while others apply them in the whole country. The implementation of the tools also vary between the countries from voluntary to mandatory. The countries should be encouraged to learn from each other.

Monitoring of farm level bookkeeping and balances will give the possibility to use the information for regional nutrient balances and to identify hot spots.

The workshop recommended that results of national studies and projects will, as far as possible, also be made available in English so that they can be used in the whole Baltic Sea area.

Programme

Tuesday, 28th April 2015

13.00-13.30 Opening

Moderator: Mr. Dietrich Schulz, Federal Environment Agency in Germany

Welcoming words

On behalf of the hosting country Germany

Mr. Dietrich Schulz, Federal Environment Agency

On behalf of HELCOM – Baltic Marine Environment Protection Commission

Mr. Dmitry Frank-Kamenetsky, HELCOM Secretariat

On behalf of the hosting institution

Mr. Hermann Hermeling, Vice president of the Chamber of Agriculture of Lower Saxony

13.30-14.30 Introduction

Efficient nutrient management as a measure to reduce the input to the Baltic Sea

Mr. Dmitry Frank-Kamenetsky, HELCOM Secretariat

General overview on the purpose and advantages of nutrient bookkeeping for modern farming and environment protection

Mr. Bernhard Osterburg, Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries, Germany

14.30-17.45 Country presentations on nutrient bookkeeping on farm level

14.30-15.15 Nutrient bookkeeping on farms in Denmark

Mr. Rune Ventzel Hansen, The Danish AgriFish Agency, Ministry of Food, Agriculture and Fishery of Denmark

Mr. Anders Nemming, The Danish AgriFish Agency, Ministry of Food, Agriculture and Fishery of Denmark

Coffee break

15.30-16.15 Nutrient bookkeeping on farms in Estonia

Ms. Livi Rooma, Estonian Agricultural Research Centre

16.15-17:00 Nutrient bookkeeping on farms in Finland

Ms. Aino Launto-Tiuttu, Central Union of Agricultural Producers and Forest Owners (MTK)

Coffee break

17.15-18.00 Nutrient bookkeeping on farms in Germany

Mr. Maximilian Hofmeier, Julius Kühn-Institute

18.00-18.10 Wrap-up of the first day

18.45 Visit of the City museum Oldenburg

19.30- Dinner (same location as City museum Oldenburg)

Wednesday, 29th April 2015

9.00-9.15 Setting the scene for the second day

Moderator: Ms. Anette Pedersen, *Environmental Protection Agency, Danish Ministry of the Environment*

9.15- 13.45 Country presentations on nutrient bookkeeping on farm level continue

9.15-10.00 Nutrient bookkeeping on farms in Latvia

Mr. Aldis Karklins, *University of Agriculture of Latvia*

10.00-10.45 Nutrient bookkeeping on farms in Lithuania

Ms. Dijana Ruzgiene, *Lithuanian Agricultural Advisory Service*

Coffee break

11.00-11.45 Nutrient bookkeeping on farms in Poland

Ms. Karina Makarewicz, *Ministry of Agriculture and Rural Development*

Ms. Tamara Jadczyzyn, *Institute of Soil Science and Plant Cultivation*

Mr. Łukasz Wojcieszak, *Department of Water Quality; Institute of Technology and Live Sciences in Falenty*

11.45-12.30 Nutrient bookkeeping on farms in Sweden

Mr. Rune Hallgren, *Federation of Swedish Farmers*

Lunch

13.30-14.15 Nutrient bookkeeping on farms in Russia

Mr. Vladislav Minin, *NW Research Institute of Agricultural Engineering and Electrification*

14.15-14.55 Discussion

As a result of the discussions, draft conclusions will be presented for consideration by the participants of the workshop. The aim of the conclusions is to outline the current situation on nutrient bookkeeping in the Baltic Sea and to have a position on what needs to be done, also in a regional perspective.

14.55-15.00 Final remarks and closing

List of participants

Nr.	Name	Country	Institution	Contact	Speaker/participant
1	Anette Dodensig Pedersen	Denmark	Danish Ministry of the Environment	andpe@mst.dk	Moderator
2	Anders Nemming	Denmark	The Danish AgriFish Agency, Ministry of Food, Agriculture and Fisheries of Denmark	andn@naturerhverv.dk	Speaker
3	Rune Ventzel Hansen	Denmark	The Danish AgriFish Agency, Ministry of Food, Agriculture and Fisheries of Denmark	ruveha@naturerhverv.dk	Speaker
4	Livi Rooma	Estonia	Estonian Agricultural Research Centre	livi.rooma@pmk.agri.ee	Speaker
5	Enn Liive	Estonia	Estonian Ministry of the Environment	enn.liive@envir.ee	Participant
6	Aino Launto-Tiuttu	Finland	Central Union of Agricultural Producers and Forest Owners (MTK)	aino.launto-tiuttu@mtk.fi	Speaker
7	Tapio Salo	Finland	Natural Resources Institute (LUKE)	tapio.salo@luke.fi	Participant
8	Amelie Bauer	Germany	Chamber of agriculture of Lower Saxony, department for sustainable land use and rural development	amelie.bauer@lwk-niedersachsen.de	Organizer
9	Franz Jansen-Minßen	Germany	Chamber of agriculture of Lower Saxony; department for sustainable land use and rural development	franz.jansen-minssen@lwk-niedersachsen.de	Organizer
10	Maximilian Hofmeier	Germany	Julius Kühn-Institute	maximilian.hofmeier@jki.bund.de	Speaker
11	Bernhard Osterburg	Germany	Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries	bernhard.osterburg@vti.bund.de	Speaker
12	Dietrich Schulz	Germany	Federal Environmental Agency	dietrich.schulz@uba.de	Moderator
13	Weert Sweers	Germany	Chamber of agriculture of Lower Saxony; department for sustainable land use and rural development	weert.sweers@lwk-niedersachsen.de	Organizer
14	Aldis Karklins	Latvia	University of Agriculture of Latvia	aldis.karklins@llu.lv	Speaker
15	Dijana Ruzgiene	Lithuania	Lithuanian Agricultural Advisory Service	dijana.ruzgiene@lzukt.lt	Speaker
16	Karina Makarewicz	Poland	Ministry of Agriculture and Rural Development	karina.makarewicz@minrol.gov.pl	Speaker
17	Tamara Jadczyzyn	Poland	Institute of Soil Science and Plant Cultivation	tj@iung.pulawy.pl	Speaker
18	Łukasz Wojcieszak	Poland	Department of Water Quality; Institute of Technology and Live Sciences in Falenty	l.wojcieszak@itp.edu.pl	Speaker
19	Rune Hallgren	Sweden	Federation of Swedish Farmers	rune.hallgren@lrf.se	Speaker
20	Jan Wärnbäck	Sweden	WWF	jan.warnback@wwf.se	Participant
21	Dmitry Frank-Kamenetsky	HELCOM	HELCOM Secretariat	dmitry.frank-kamenetsky@helcom.fi	Speaker
22	Laura Meski	HELCOM	HELCOM Secretariat	laura.meski@helcom.fi	Organizer