NUMBER

June 2012

# INNOVATIVE AGRO-ENVIRONMENTAL

# Technologies

FOR SUSTAINABLE FOOD PRODUCTION IN THE BALTIC SEA REGION

#### **Cover photo**

The new exhibition "Win-win technologies for nutrient management" was opened at Agro Business Park on 9 May 2012, and around 100 guests saw the exhibition, including the exhibited technologies inside and outside.

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# New exhibition opened

# Win-win technologies for nutrient management



Agro Business Park opened on 9 May 2012 a new exhibition: "Win-win technologies for nutrient management". The exhibition focuses on:

- extrusion of grass from natural areas as a new and promising pretreatment technology for biogas production;
- mobile separation of slurry with a new technology which ensures that fresh slurry can be separated directly from the slurry channels in the barn;
- controlled drainage, one of several SCIEN drainage technologies, which enables farmers to control the water level in the field to benefit both the environment and the yield; and
- phosphorus index, a risk indicator for phosphorus loss from the fields, calculated as part of fertiliser planning, which may give farmers more freedom because environmental requirements can be targeted at fields with real risk.

The exhibition also show other technologies for good nutrient management, e.g. for measuring water quality, for precision fertilisation, for acidification of slurry, and for energy efficient stirring of digester tanks.

The exhibition is partly virtual and video clips and PowerPoints etc. can be seen on your own smartphone, tablet or computer from <u>http://goo.gl/WpBtP</u>, or via scanning the above QR code.

Traditional subsurface drain pipe





Traditional drainage (left) and controlled drainage (right). Source: <u>http://agro-</u> technologyatlas.eu/win win technologies for nutrient management.as px.



# Knowledge Sharing

# Controlled drainage in Swedish perspective

By Henning Lyngsø Foged, WP4 leader, BalticCOMPASS

Controlled drainage is subsidised in Sweden as an environmental measure, but only three farmers has used this opportunity since it was introduced in 2011. The poor response to the introduced subsidy is probably due to lack of information about the benefits and economy of controlled drainage, because there is an abundance of fields it would be suitable for.

# Controlled drainage is one of several SCIEN drainage technologies

Controlled drainage has the potential to lower non-point source leaching of nutrients from agricultural land in a cost-effective way. Investments in control structures and extra labour could provide good short-term returns in the form of higher crop yields and better nitrogen use efficiency and good long-term returns in the form of less eutrophication and cleaner coastal waters.

Controlled drainage is one of several SCIEN drainage technologies that BalticCOMPASS is working for the wider dissemination of. SCIEN means <u>s</u>ustainable, <u>c</u>ontrolled, <u>intelligent</u>, <u>environmentally friendly and <u>n</u>utrient loss mitigating; it transforms the drainage concept from mere being a way to get rid of excess water into being a concept for intelligent managing of the water turnover for field crop production, and give the farmers a much better control over the water and the nutrients in their fields.</u>

Controlled drainage works simply in the way that control wells are connected to the existing drainage system, whereby the ground water level can be controlled:

Examples of other SCIEN drainage technologies are constructed wetlands, ditch dams, two stage ditch drainage, and drain filters.

## Abundance of suitable fields

There are no statistics, but an estimate is that between one half and two third of the cultivated area in the Baltic Sea region is drained. However, not all drained fields are suitable for controlled drainage.

Flat fields with a permeable upper profile are most suitable for the construction of controlled drainage. Swedish University of Agricultural Sciences has, to give an example, evaluated 726,000 hectares of fields in Halland, Skåne, Blekinge and Kalmar counties in Sweden, and concluded that 14 percent or almost 100,000 hectares had a very high suitability for controlled drainage, seven percent had a high suitability and 13 percent medium suitability.

#### Impressive effects

Senior Researcher Ingrid Wesström from Swedish University of Agricultural Sciences followed the effects of controlled drainage over several years, and found that controlled drainage reduce the outflow of water with 70-90%, of NO3-N with 70-90% and of P with 60-90%.



	Conventional drainage		Controlled drainage	
Year	Outflow (mm)	NO <sub>3</sub> -N	Outflow (mm)	NO <sub>3</sub> -N
		(kg ha⁻¹)		(kg ha⁻¹)
1996/97	170	38	37 (80 %)	8 (80 %)
1997/98	240	31	14 (90 %)	2 (90 %)
1998/99	450	30	120 (70 %)	10 (70 %)
1999/00	400	26	54 (90 %)	4 (80 %)
2000/01	360	32	59 (80 %)	7 (80 %)
2001/02	270	9	78 (70 %)	2 (80 %)

Subsurface drainage outflow and nitrogen loads. Results from six years of field studies. Source: <u>http://www.landbrugsinfo.dk/Planteavl/Jordbund/Sider/plk06 96 4 I Wesstroem.pdf?List=%7B2e</u> <u>d4537d-f095-4132-b1fd-8e1c0c56a403%7D&download=true</u>.</u>

The reduced leaching is not alone beneficial for the environment: Much of the retained nutrients are taken up by the crop, which also benefit from the better availability of water, leading to higher crop yields. Ingrid Wesström found for example that for barley the yield was increased by 18% and the N uptake by 19%, while the corresponding figures for wheat were 10% and 27%.

#### Costs and subsidies

In Sweden, support for controlled drainage is included in the Rural Development Program as a designated environmental measure, and a fixed payment is given of about SEK 8,000 (about € 800, the subsidy level may vary between counties) per control well for a maximum of one and a half wells per hectare.

The subsidy is not enough to cover the cost of installing the control wells. The control wells costs themselves only about SEK 5,500, but additional investments for excavation works etc. costs SEK 3,500 to SEK 6,500, wherefore the farmers investment is about SEK 1-4,000 higher than the subsidy.







## Policies

The following is an excerpt from a press release from the Danish Parliament, Folketinget, issued on 8 June 2012:

# Maize is ruled out for financial support to biogas

#### By Claus Djørup, Fagbressebureauet, Christiansborg

Maize and other non-sustainable crops are eliminated from the VE-support of DKK 26 per giga joule for biogas.

This is specified in a written statement by the Minister for Climate and Energy Martin Lidegaard in the parliamentary report concerning the bill about VE-support (L182). In this he states, how he will make use of the law to make financial support dependent on sustainability.

- Production of biogas must take place in accordance with sustainable conditions and mainly be based on waste products, the Minister for Climate and Energy Martin Lidegaaard (R) says to Energi.dk.
- There is a common wish to avoid a situation like in Germany, where a great part
  of the agricultural area is converted to maize production so that much of the
  biogas production is based on maize solely, the Minister for Climate and Energy
  Martin Lidegaard states.

The enclosure of the sustainability criteria was confirmed in an urgent consultation Wednesday afternoon (7th of June) in the Parliaments Energy Committee. The parliamentary report was immediately submitted, so that all four bills in the energy package – the first part of the secondary legislation following the energy agreement from the 22<sup>nd</sup> of March – is ready for approval tomorrow Friday 9<sup>th</sup> of June.

In principle, maize could be used in biogas production, but without financial support.

"It has been stated that the increased financial support to biogas can lead to a significant expansion of growing maize in areas, which today are used for food production. Maize and other energy crops can be used as raw material in the biogas production, however, an uncritical increased production can result in loss of environmental- and climate benefits of biogas production", according to Martin Lidegaard's statement.

# 



## **Project activities**

# We would like to support a relevant biogas investment project in Poland!

Agro Business Park is on behalf of BalticCOMPASS searching for a relevant biogas investment project in Poland.

Agro Business Park can offer to assist with preparation of an investment project for biogas production on (mainly) livestock manure. The assistance can for instance be given to perform feasibility studies, investment planning, financing planning or alike, or evaluation of such plans if already made. BalticCOMPASS is only partly financed from the Baltic Sea Region Programme, wherefore we need at least 25% paid from the Polish side.

The perspective is further that the project owner can be partner in the follow-up project to BalticCOMPASS, which is currently being planned. We will include an investment support of  $\notin$  250,000 to the Polish partner in this follow-up project, which will probably run in 2013-14.

The requirement to the planned biogas project is that:

- There must be clear public interests. This is for instance the case if the biogas plan is going to be entirely or partly owned by a public institution, or if the heat from the plant will be used for local district heating. A private person or company cannot be supported.
- The investment must be owned by the Polish partner for at least 5 years.
- We wish that it is (mainly) livestock manure that shall be digested.
- There must be clear environmental benefits from the investments.
- The plant shall serve as a demonstration site and give inspiration to make similar investments.

We cannot be sure to obtain financing for a follow-up project, but we have been asked for a proposal, and we believe there is a good chance!

Please contact as soon as possible WP4 leader of BalticCOMPASS, Henning Lyngsø Foged, <u>hlf@agropark.dk</u>, tel. +45 4034 8625, in case this has your interest.



## Events



# 22nd International Exposition "Belagro-2012" in Belarus

#### By Nikolay Kapustsin, Russia

In Belarus in the period 5th -10th June 2012, the 22nd International Exposition "Belagro-2012" took place. The Exposition was organized with assistance from the Ministry of Agriculture, Ministry of Food, and National Academy of Sciences of Belarus.

About 376 companies and enterprises from 18 countries took part in this exposition. The Exposition "Belagro-2012" was visited by 40 official delegations from agrarian departments of 30 countries and more than 50 thousand specialists.

In the framework of this international exposition, the first specialised "BIOGAS-2012" show took place.

Here presentations of a biogas plant's operation were made and interested visitors were provided with information about the Baltic Compass project, its scope of work and objectives.





# AgroTechnologyATLAS Workshop

A workshop with participation of two representatives of each country in the Baltic Sea Region was convened in Copenhagen on 16 May.

It is the intention that the ATLAS shall improve the access to scientifically validated and trustworthy information about agro-environmental technologies, including about the Best Available Techniques in relation to EU's Directive on Industrial Emissions (2010/75/EU – follower of the IPPC Directive) – the legal BAT-notes – from the Baltic Sea Region countries.

Presentations can so far be downloaded from this packed file <u>atlasworkshop.rar</u>, and summaries of discussions and conclusions will soon be available.



The control box.



The cooperative members viewing the separation process.

# Investment project in mobile separation on Bornholm broadcasted on regional TV

#### By Henning Lyngsø Foged, WP4 leader, BalticCOMPASS

BalticCOMPASS is not only about experts' talk and reports; we actually invest in the technologies we recommend so that they are demonstrated in order to encourage others to do similar investments.

One of the investments, dealing with mobile slurry separation on Bornholm, is now in place, and Bornholm regional TV informed about the investment project on 12 June, as a preparation to the democratic festival for politicians, policy makers, interest organizations and many other, "Folkemødet", which took place on the following days from 14 to 17 June, and where several organized debates dealt with environment and agriculture.

The clip about the mobile separation can be seen at this link http://www.tv2bornholm.dk/nettv/nyeste.aspx?videoID=31716 - about 7:48 after start of the programme. The clip (in Danish language) shows the chairman of the established cooperative "Skruepresserforeningen", pig farmer Carsten Nielsen as well as the local plant production adviser, Carsten Mouritsen, explaining the benefits of the innovative slurry separation technology, and its positive effects on the environment and the farming, as well as on the operations of the regional biogas plant at Bornholm, Biokraft, which has a high need for more biomass to fill up its capacity.

The Bornholm isle has an important role in BalticDEAL, and the investment project in mobile separation is to a high extent based on a good cooperation in Denmark between BalticDEAL and BalticCOMPASS.



Farming within the Baltic Sea Region will have to meet new challenges. This include needs to adapt agricultural practices and production to a changing climate, as well as need to reduce emissions of nutrients to the Baltic Sea.

# BaltAdapt workshop

#### By Henning Lyngsø Foged, WP4 leader, BalticCOMPASS

BalticCOMPASS was invited to participate in strategy development at a BaltAdapt workshop on 30-31<sup>st</sup> of May 2012 at the Norrköping Visualisation centre in Sweden. The workshop confirmed that the innovative agro-environmental technologies we in BalticCOMPASS have prioritised for deserving a wider disseminated use, namely biogas production on livestock manure, slurry separation, SCIEN drainage technologies and Pindices, also from an agricultural climate strategy perspective are very important.

Climate change will influence precipitation amounts and patterns, and lead to an increase in terrestrial and ocean temperatures and a rise in sea level. The resulting changes will jeopardize the integrity of the ecosystem and increase risks caused by natural disasters.

Baltadapt is developing a Baltic Sea Region-wide climate change adaptation strategy. This truly transnational strategy will focus on the sea itself and its coastline. While it is understood that such a strategy cannot be adopted by Baltadapt, the project can ensure its preparation and clear the ground for its adoption.

The Baltadapt project is funded by the Baltic Sea Region Programme 2007–2013. It has a total budget of 2.86 million Euro, of which 2.1 million Euro are ERDF co-financed and 0.75 million Euro are partners' contributions. It runs from October 2010 to December 2013. Baltadapt is a flagship project under the EU Strategy for the Baltic Sea Region and has been awarded the Baltic21 Lighthouse Project quality label by the CBSS Expert Group on Sustainable Development.



## **Technical reports**

# Vecauce Biogas Plant in Latvia - Improvement and Enlargement

This Feasibility Study assesses envisaged and possible improvements and ways of expansion of the biogas plant at Vecauce. The report can be found here:

http://agro-technology-

atlas.eu/docs/repo20905\_Baltic\_Compass\_Vecauce\_Biogas\_Feasibility\_Study.pdf

#### •----•

# Report (draft) on "Assessments of Biogas Projects in Belarus"

The report provides an overall assessment of selected biogas plants in relation to the Belarusian context. It was the objective to highlight possible problems on the individual plants and provide overall recommendations for possible changes to be further analyzed as well to be taken into consideration for the future development of biogas in Belarus.

The report can be found here: <u>http://agro-technology-</u> <u>atlas.eu/docs/repo20905 Baltic Compass Assessments Belarus Biogas Plants.pdf</u>



### Colophon

This electronic newsletter is sent out quarterly from <u>http://agro-</u> <u>technoloy-atlas.eu</u> with the purpose to support innovation and investments within agroenvironmental technology in the Baltic Sea Region by publishing relevant knowledge about the field to the Baltic Compass Network. To read more about the project

please go to:

#### http://www.balticcompass.org

We encourage everyone to contribute with content to this newsletter by contacting the editors.

For subscription or unsubscription, please register at the web-page <u>http://agro-technoloy-</u> <u>atlas.eu</u> or notify one of the editors via e-mail.

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## Upcoming events

#### Almedalsveckan

Venue:	Visby, Sweden
Date:	2. July 2012
The event:	At Almedalsveckan all the Swedish political parties stakeholders to organise events throughout the

The event: At Almedalsveckan all the Swedish political parties gather together with stakeholders to organise events throughout the week. This year Baltic Compass is taking part in a discussion on the business possibilities environmental regulation offers.

More info: <u>http://www.balticcompass.org/\_blog/Events/post/27\_Almedalsveckan/</u>

#### A Greener Agriculture for a Bluer Baltic Sea

- Venue: Bella Conference Centre, Copenhagen, Denmark
- Date: 24 25. October 2012
- The event: The major forum for networking and exchange of knowledge, experiences and ideas around the Baltic Sea
- More info: The organisers are the agri-environmental EU projects Baltic Compass, Baltic Deal and Baltic Manure together with WWF.

#### More information soon to come:

- www.balticcompass.org
- www.balticdeal.eu
- www.balticmanure.eu

#### Regional dialogue on flood and nutrient leaching management

Venue: Kristianstad, Sweden

Date: 25-26 September 2012

The event: This workshop aims at sharing practical and scientific knowledge to achieve sustainable agriculture in flooded environments through win-win solutions considering multiple risks, functions and benefits. It aims to explore how feasible it is for stakeholders from different sectors involved with flood mitigation (e.g. human safety, agricultural and spatial planning sectors) to consider solutions outside their traditional remit of work, in particular ecosystem services provided by wetland environments. Given this demand, how can the agricultural sector become more sustainable by providing the (ecological) services needed for flood mitigation?

More info: <u>http://www.balticcompass.org/\_blog/Events/post/Regional\_dialogue\_on\_fl</u> <u>ood\_and\_nutrient\_leaching\_management\_through\_agro-</u> environmental\_measures