

# Technologies

FOR SUSTAINABLE FOOD PRODUCTION IN THE BALTIC SEA REGION



Fibre fraction from centrifugal separation of digestate.

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## EU focus on manure processing

**DG ENV has contracted Agro Business Park to coordinate the clarification of manure processing technology activities in EU, and associated threats, opportunities and future expectations.**

Use of manure processing technologies are in rapid increase and gains considerable attention in EU's Member States, who see them as measures whereby, in some cases, several policy goals concerning the environment, renewable energy production, reduction of climate gases, and waste handling can be met by one and the same technology in a cost efficient way.

The use of manure processing technologies is a relatively new practice; it is a rather unregulated area without sufficient validated documentation and statistics, compared to its large potential role in relation to the policy goals mentioned above. DG ENV has on this background contracted Agro Business Park to coordinate the clarification of manure processing technology activities in EU, and associated threats, opportunities and future expectations. The project "Manure Processing Activities in Europe" is running until end of October 2011, and is primarily a desk study, where a livestock manure competence institute based near Barcelona in Spain, Fundacio Estudis del Medi Ambiente (GIRO Technical Centre), will assist with undertaking of activities, here under be responsible for case studies etc. in especially southern-EU Member States.

The project will consolidate Agro Business Parks' capacity as a coordinating competence centre when it comes to innovation in agro-environmental technologies. Other concurrent activities that give synergies to this project are for instance undertaken in the balticCOMPASS (<http://www.balticcompass.org>) and the "Best available technologies for pig manure biogas plants in the Baltic Sea Region" projects.

Read more about the project here:

[http://inbiom.dk/download/nyheder/20110202\\_projektbeskrivelse\\_manure\\_processing\\_activities\\_in\\_europe.pdf](http://inbiom.dk/download/nyheder/20110202_projektbeskrivelse_manure_processing_activities_in_europe.pdf).



Manure pellets, made of separated and dried fibres from separation of digestate.



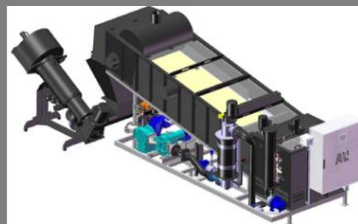
Installation for reverse osmosis of liquid separation fractions.



Decanter centrifuge from GEA Westfalia



Band filter separation from Siemens



AL-2-Kemira separation unit, often placed in a mobile container, is the most common separation technology in Denmark, combining flocculation, filtration and screw pressing.



Composted fibre fraction is here used as bedding material in a cubicle stable for dairy cows in the USA.

## Knowledge Sharing

### Livestock manure separation has several advantages

By Henning Lyngsø Foged, Agro Business Park, Denmark

#### Balanced fertilisation

Areas with a high density of pigs will normally spread more phosphorus (P) in livestock manure on the fields than the crops need. Typically crops grown on pig farms would need about 25 kg P per ha at high yield levels, and less at lower yields. However, land is the most scarce resource in areas with high livestock density, wherefore farmers tend to spread up to the maximally allowed amount of nitrogen (N) per ha – according EU's Nitrates Directive up to 170 kg N per ha, and in Denmark up to 140 kg N per ha. However, this amount of N in pig manure will give up to the double load of P per ha, compared to the needs of the crop, wherefore a large part will be left in the nature.

Some countries have official P norms, for instance Sweden with a flat rate P norm of 22 kg per ha. However, this gives the farmers the problem/cost of balancing the livestock manure with purchased N in mineral fertiliser.

#### Different separation technologies

Separation of livestock manure will in general split 100 kg slurry in 5 kg fibre fraction with about 25-35% dry matter, holding roughly 20% of the N and 80% of the P, while on the other hand the 95 kg liquid fraction holds 1% dry matter, 80% of the N and 20% of the P. As P is a costly and scarce resource, costing around € 2-3 per kg, while N costs around € 1 per kg, livestock manure separation can save money for farmers and save the nature from loss of P from farming.

The mentioned figures show big variation. The separation efficiency depends a lot on the used technology. The most common separation technology in Denmark, provided by AL-2/Kemira, combines flocculation, band filtration and screw pressing. Other separation technologies include for instance use of centrifuges, grates, sieves, drum filtration, press filtration, sedimentation and flotation. The choice of separation technology shall be made under consideration to the purpose of the separation, the needed capacity, the investment size and running costs for a given installation.

#### The fibre fraction can boost biogas production

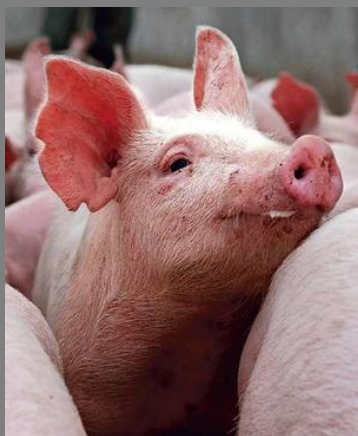
The optimal efficiency of a biogas plant is reached by use of substrate of 12.5% dry matter (DM). Higher DM makes pumping impossible, and lower DM means low efficiency due to all the water that must be contained in the digestion tanks, and the energy needed to heat this water. However, livestock slurry often holds less than 6% DM.

In Germany the efficiency is increased by use of especially maize silage, while also many types of organic wastes, for instance from the food processing industry is used in Denmark and other countries. However, use of separation fibres have the same effect, it is very easy to blend with the raw slurry, and it is in addition to that free and CO<sub>2</sub> neutral.

#### Wide perspectives

The multiple environmental benefits of livestock manure separation are the reason why balticCOMPASS during the spring 2011 will investigate barriers and opportunities for a higher use of this technology in the countries around the Baltic Sea.

So far livestock manure separation is mainly used in Denmark, where there currently are more than 50 installations, treating around 3% of the slurry amounts.



Use of innovative agro-environmental technologies shall ensure livestock/food production can happen with consideration and respect for the environment and nature values.



Biogas plant in Latvia.

## Impressions from workshop about “Investments in agriculture for better environment”

*The workshop was held in Helsinki on 17 November 2010 in connection to the conference: “A greener agriculture for a bluer Baltic Sea”, a joint balticDEAL and balticCOMPASS conference*

*By Johanna Logrén, Research Scientist, MTT Agrifood Research Finland / Baltic Manure*

The overall purpose of the workshop, chaired by Michael Stöckler, Agro Business Park, was to present and discuss priorities, methods, challenges and effects of agro-environmental technology investments in the Baltic Sea Region. The seminar was well attended with around 55 participants.

Henning Lyngsø Foged, work package leader of balticCOMPASS, talked in his presentation about the needs for investments in innovative environmental technologies in the region, and pointed out that work package 4 of balticCOMPASS will support investments, which favor both farming and the environment.

Ingmars Sniedze, Latvian Farmers Parliament, said that there in Latvia are problems with elementary technologies, and mentioned manure storage, soil acidity, maintenance of drainage systems and manure standards. These issues have higher priority in Latvia than innovative technologies.

Nerijus Zableckis, Lithuanian Fund for Nature, pointed out that forestation of old meadows and deep crisis of beef growing farms due to the current market situation is problematic in relation to bio-diversification; no less than 50% of the areas with natural meadows have been lost in just a few years. Heavy expansion of the conventional drainage system in the Soviet time also damaged nature values.

Mikael Sjövall, gave examples of agro-environmental technology investment projects, in which NEFCO have been involved in financing. NEFCO is interested in cooperation for identification of bankable investment projects with environmental effects, and cannot support programmes.

## Market descriptions for Poland and the Baltics

*By Louise Krogh Johnson, Agro Business Park, Denmark*

If you are interested in learning about the environmental technology and bioenergy sector in either Poland or the Baltic countries new market descriptions are now available. They provide a broad overview of both incentives and barriers for doing business within the bioenergy and environmental technology sectors in the different countries.

The reports are written primarily by employees in Agro Business Park as part of the project "Network for biomass to energy". The relevant information has been collected via study tours, meetings, and desk research. The aim is to enhance networking and information dissemination, in the hope that this will lead to increased cooperation across borders.

These reports follows similar market descriptions for Spain and China, and are number 3 and 4 in a series. The reports are available for free download here:

[http://inbiom.dk/en/knowledge/market\\_opportunities\\_02/](http://inbiom.dk/en/knowledge/market_opportunities_02/)

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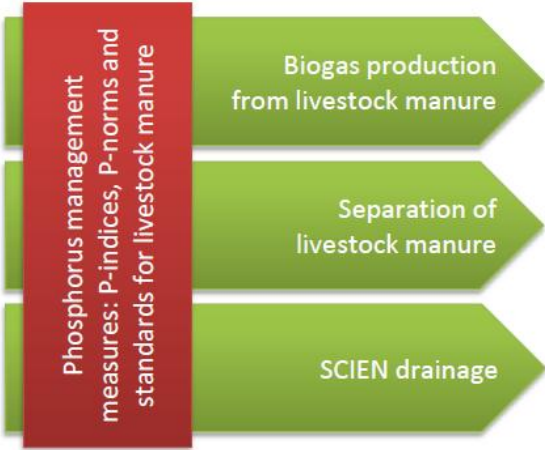


Water hole in Lithuanian field: The SCIEN drainage concept comprises technologies that consider both the agricultural productivity and the environment. More information about the SCIEN drainage concept will be provided in the next issue.

## Innovative technologies deserving a wider dissemination

By Henning Lyngsø Foged, Agro Business Park, Denmark

One of our tasks in balticCOMPASS work package 4 is to prepare and conduct a Sector Study on legal, technological and economic framework and barriers for selected and prioritised agro-environmental technologies. The selection has now been made on the technologies which we will deal with:



Just to mention some of the motivations behind this selection: Biogas production was selected due to its documented ability to enable a high bio-availability of the nitrogen in the manure, separation due to its enabling of balanced fertilising of the fields among multiple benefits, and SCIEN drainage because of the large risk for loss of plant nutrients with drain water from conventionally drained fields. Phosphorus management measures are behind laying driving incitement for deployment of those technologies, as well as important pre-conditions for managing them.

These technologies have been estimated to be the most promising in relation to the purpose of the entire balticCOMPASS project. The study will be based on literature reviews, combined with additional information collection from relevant professionals and institutions. The result of the analysis will be presented to decision makers with focus on how the technologies may be used to reach policy targets and which legal barriers need to be removed in order to give farmers the necessary incentives to invest in them.

## Recap of workshop: “Managing livestock manure for sustainable agriculture” in Wageningen, Holland, November 2010

By Louise Krogh Johnson, Agro Business Park, Denmark

The workshop was organized by the European Commission DG Environment and the Ministry of Economics, Agriculture and Innovation of the Netherlands. The purpose was to promote and exchange information on manure management – manure processing in particular - among EU member states.

165 people from 25 countries participated spanning from policy makers to farmer organizations, experts, and environmental groups. On the agenda was a discussion of how, through manure processing, a decrease in emissions of nitrogen and phosphorus is best achieved and the ground and surface waters are best protected.

A report of the workshop as well as the presentations given by the speakers are available on the European Commission’s website:

[http://ec.europa.eu/environment/water/workshop\\_manure.html](http://ec.europa.eu/environment/water/workshop_manure.html)

## Colophon

This electronic newsletter is sent out quarterly with the purpose to support innovation and investments within agro-environmental 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 un-subscription, please notify one of the editors via e-mail.

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This newsletter is published in the frames of the Baltic Compass project

# BALTIC COMPASS

by leader of Work Package 4,  
Agro Business Park A/S



with co-funding from the Baltic Sea Region Programme



## Upcoming events

### Workshop: Manure separation

Venue: The aula of the University of Vechta, Süddoldenburg, Germany

Date: 17 February, 2011 from 10.00 – 16.00

The event: The subject is manure separation as a means to optimize the gas potential of pig manure used in biogas plants as well as the additional benefit of optimal utilization of nutrients. OBS: The event is in German.

More info: [http://bioenergie-suedoldenburg.de/images/stories/separation/flyer\\_workshop\\_glleseparation.pdf](http://bioenergie-suedoldenburg.de/images/stories/separation/flyer_workshop_glleseparation.pdf)

### Seminar: Willow conservation in Sweden

Venue: Swedish University of Agricultural Sciences (SLU), Alnarp, Skåne, Sweden

Date: 8 – 9 March, 2011

The event: There is a lot of experience in growing willow for energy purposes in Sweden. The purpose of the seminar is to share knowledge and network within this field. Everyone with an interest in willow cultivation is welcome. OBS: The event is in Danish/Swedish.

More info: [http://inbiom.dk/download/newsletter/nl20110210/20110208\\_program\\_for\\_pi\\_letur\\_til\\_skaane.pdf](http://inbiom.dk/download/newsletter/nl20110210/20110208_program_for_pi_letur_til_skaane.pdf)