

# Technologies

FOR SUSTAINABLE FOOD PRODUCTION IN THE BALTIC SEA REGION

## Cover photo

Peter Engel, Pernille H. B. Poulsen and Jesper Lauridsen from the VERA Secretariat, together with Henning Lyngsø Foged (left), WP4 leader of Baltic COMPASS, discussed cooperation about the AgroTechnologyATLAS on a meeting in Copenhagen 31 August 2012.



## Strengthened AgroTechnologyATLAS

### VERA Statements to be published at “The ATLAS”

*By Henning Lyngsø Foged, WP4 leader of BalticCOMPASS*

A major aim of “The ATLAS” at <http://agro-technology-atlas.eu> is to provide improved access for stakeholders in the Baltic Sea Region countries to scientifically validated and trustworthy information about agro-environmental technologies, including Best Available Techniques (BAT’s) in relation to EU’s Directive on Industrial Emissions (2010/75/EU).

The VERA Secretariat, organising official verification of the effects of agro-environmental technologies, has agreed to take the responsibility for the maintenance of “The ATLAS” as regards information about verified effects of the technologies, in specific the point “VERA Statement”, found under the technology descriptions.

This is indeed good news for everybody that works with agro-environmental technologies in the Baltic Sea Region, and it consolidates the value of “The ATLAS” as a reference for information.

The arrangement is to a high degree a result of the “ATLAS workshop”, held in Copenhagen on 16 May 2012 (see newsletter 7, page 6); the workshop largely revealed a need for better access to trustworthy information about agro-environmental technologies in the Baltic Sea Region countries.

This newsletter is therefore to a high extent dedicated to a presentation of VERA.

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The framework for test and verification is based on the internationally accepted VERA test protocols. A technology that has been tested according to one of these VERA test protocols can then obtain a VERA Verification Statement. A VERA Verification Statement secures documentation for the environmental efficiency and operational stability of a technology and is an important step when introducing a technology to the market. Activities are currently ongoing to develop new test protocols and involve additional countries in the VERA framework.

## Environmental Technology Verification

### VERA ensures an international verification standard for environmental technologies for agricultural production

*By Peter Engel, Head of the VERA Secretariat*

***The purpose of VERA is to enhance a well-functioning international market for environmental technologies to help solve the environmental challenges of agricultural production.***

VERA is an international organisation for testing and verifying environmental technologies within the agricultural sector. VERA is an abbreviation for verification of environmental technologies for agricultural production and was initiated by the national Danish, German and Dutch environmental and agricultural authorities in 2008.

#### **The VERA framework**

VERA consists of a number of collaborating parties, technical experts and independent institutions.

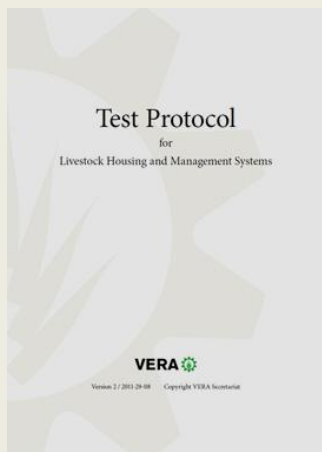
The International VERA Board – IVB consists of representatives from the national agricultural and environmental authorities from the three participating countries. The IVB is the decision making authority that establishes the rules, criteria, and scope of the VERA activities.

The technical strength of VERA is essential, and is maintained by a number of technical experts from each of the three participating countries. The technical experts are appointed to each of the technology subject areas within VERA and they are organized in the International Verification Committee – IVC. The IVC is in charge of revising existing protocols and developing entirely new ones. Furthermore they play a central role in ensuring the uniformity and reliability of the test and verification activities that are carried out within the VERA framework.

The VERA test is carried out by independent test institutes. They have the main responsibility for planning, conducting and reporting test activities according to the VERA test protocols. The test institutes are independent organisations and therefore not directly a part of the VERA organisation. However, they need to demonstrate the necessary experience and knowledge regarding the areas in which they conduct tests.

The international VERA Secretariat is managed by Danish Standards Foundation on behalf of the Danish Environmental Protection Agency. The VERA Secretariat functions both as an international secretariat that facilitates the international activities in VERA and as a national secretariat that facilitates the VERA activities in Denmark. Internationally, the VERA Secretariat organizes, coordinates and implements the activities that IVB chooses to launch. The secretariat is also responsible for launching, facilitating and monitoring the activities of the IVC. In addition, the VERA Secretariat handles, among other things the international communication, dissemination and marketing of VERA and running the VERA website.

In Denmark the VERA Secretariat advises the environmental technology manufacturers, test institutes and local authorities. Furthermore the secretariat coordinates the work with the technical experts, including the assessment of applications for a VERA Verification Statement. Last, but not least the VERA Secretariat issues the VERA Verification Statements and ensures that they are used as intended.



You can read more about the VERA test protocols at <http://www.veracert.eu/en/technology-manufacturers/test-protocols/>.

## VERA is centred on internationally accepted test protocols

*The VERA test protocols are designed to test the environmental efficiency and operational stability of a range of environmental technologies for livestock production.*

### VERA test protocols

The International acceptance of a VERA Verification Statement is founded on the VERA test protocols. The protocols are developed by international experts and give a thorough description of regulations and recommendations for implementing tests and reporting the results. When a technology has been tested according to the relevant test protocol, a VERA Verification Statement can be obtained based on its environmental efficiency and operational stability. The test protocols then provides reliable and comparable information about the performance of new technologies to farmers, authorities and other stakeholders.

The VERA test protocols include five different types of environmental technologies.

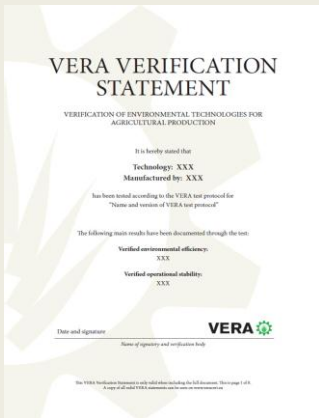
- Covers and other Mitigation Technologies for Reduction of Gaseous Emissions from Stored Manure  
The objective is to reduce the emission of ammonia, odour and greenhouse gases, through environmental technologies for storage or the processing of stored manure.
- Measurement of Gaseous Emissions from Land Applied Manure  
This test protocol comprises systems or devices that reduce the contact area between land-applied manure and the atmospheric air, or treatments of the manure that affects the emissions of odour and ammonia
- Slurry Separation Technologies  
The effect of a separation technology is measured on its capability to separate phosphorus (P) and organic nitrogen (N) from the manure into the solid fraction.
- Air Cleaning Technologies  
The technologies are defined as air purifying or air treatment systems, which are connected to force-ventilated animal housing systems. The objective is to reduce emissions of ammonia, odour and dust.
- Livestock Housing and Management Systems (second edition 2011)  
This protocol comprises a number of initiatives and technologies in livestock housing and management systems that include housing design, manure treatment and management. The objective is to reduce the emissions of ammonia and odour.

### New initiatives

The three participating countries seek to continually develop and expand the VERA scheme. Two new development projects will be initiated this autumn to strengthen the international collaboration and the scope of VERA:

- The first project is a research and development project on harmonisation of sampling and measurement methods for gaseous emissions for air cleaning technologies.
- The second project is a research and development project regarding test of the environmental efficiency of technologies for biogas production.

Both projects has been launched through the European network ICT-AGRI, and based on this both France and the Flemish experts have expressed their interest in participating in these activities.



For manufacturers of environmental technologies a VERA Verification Statement is a unique branding tool and an important part of accessing international markets.



Munters AB is currently testing a chemical air cleaner which is to reduce the emission of ammonia from the ventilation air in pig and poultry stables.



The first actual VERA Statement was handed over to BioCover on 2 October 2012 by the Danish Minister of Environment, Ms Ida Auken. Read more at – <http://www.veracert.eu/en/news/the-first-vera-verification-statement-granted-by-the-danish-minister-of-the-environment/>.

The VERA statement is found here – [http://www.veracert.eu/da/nyheder/miljoeminister-overraekker-den-foerste-vera-erklaering/~media/DS/Files/Downloads/Artikler/VERA/VERA\\_erklaering\\_2012\\_okt\\_enkeltside.ashx](http://www.veracert.eu/da/nyheder/miljoeminister-overraekker-den-foerste-vera-erklaering/~media/DS/Files/Downloads/Artikler/VERA/VERA_erklaering_2012_okt_enkeltside.ashx)

## A VERA Verification Statement is an important step when introducing a technology to the international market

*For manufacturers of environmental technologies a VERA Verification Statement is a unique branding tool and an important part of accessing international markets.*

### The VERA test is a competitive advantage

The VERA Verification Statement ensures credibility for the environmental efficiency and operational stability of environmental technologies for agricultural production. The VERA Verification Statement consists of a short description of the technology together with the main results from the VERA test, focusing on the environmental efficiency and operational stability. In Denmark the VERA Verification Statement is a condition for admittance on the Danish Technology List. Therefore the VERA Verification Statement is a desirable marketing tool for manufacturers of environmental technologies for agricultural production. Due to the cross national collaboration, the VERA Verification Statement ensures technology manufacturers international acceptance of the technology and by that access to the international market.

### Contributing to an environmentally friendly agriculture

Seven manufacturers of environmental technologies are currently testing or have just finished testing their technologies according to the VERA test protocols, in order to obtain a VERA Verification Statement. One of these manufacturers is Munters AB, who is testing a chemical air cleaner, which is to reduce the emission of ammonia from the ventilation air in pig and poultry stables.

Simon Granath, biologist at Munters AB explains further:

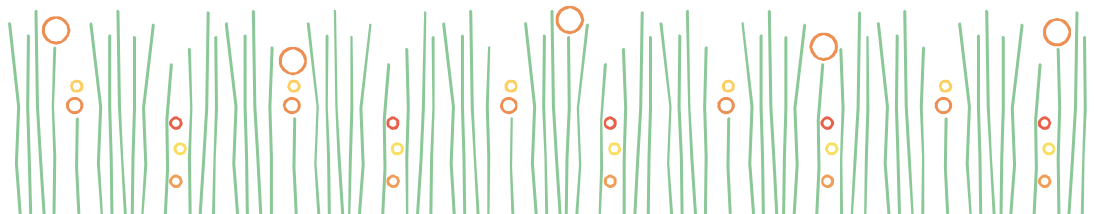
- “The VERA test is good in a sales perspective. There is a value in having a VERA Verification Statement for our technology, and when we have to compare ourselves with competitors, we have an advantage with the results that the test provides.”

The air cleaner is tested at a pig stable in Jutland, Denmark, and the owner of the stable, farmer Karsten Rasmussen was very keen to participate in testing the technology:

- “I like being a part of where things are happening, and at the same time I see it as our contribution to developing a more environmentally friendly agriculture.”

Even though Munters A/S have not obtained their VERA Verification Statement yet, Simon Granath is already experiencing an increased interest and market advantage of the test.

- “We point out that we are testing according to the VERA test protocol in collaboration with the Danish Pig Research Center, when we meet interested parties at e.g. trade fairs. Further it is important that we can provide a technology which is going to be admitted to the Danish Environmental Protection Agency’s Technology List.”





Slurry spreading tanker mounted with BioCover's SyreN technology for slurry acidification during field spreading.

## Technology meeting

### Further development of slurry acidification technology

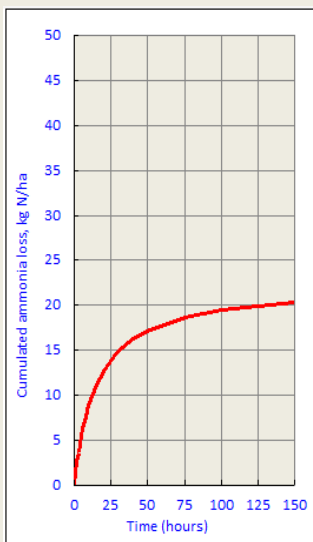
By Henning Lyngsø Foged, BalticCOMPASS WP4 leader

**Slurry acidification has a considerable environmental impact. It reduces ammonia emissions, which affects both nitrogen and particular pollution. In addition, it raises the yields of the crops due to the improved fertilisation with the "trapped" nitrogen and the sulphur that comes from the sulphuric acid used for the acidification.**

Today, around 11% of the slurry production in Denmark is acidified, which actually is an extraordinary situation, seen in international perspective, because Denmark is the only country where slurry acidification takes place, at least so far. There are different technologies, and acidification can happen in the livestock houses, in the slurry tank, or during field spreading. The latter is the most popular system, and has during the last two years been mounted at slurry tankers on 56 machine pools in Denmark. The technology, called SyreN, is offered by BioCover, who called for a meeting in Vejle in Denmark on 5 September in order to announce further development of the technology:

- **SyreN report:** A GPS system connected to the slurry spreaders documents the acidification, which for some farms (for instance those situated in Natura2000 areas with requirements to reduce ammonia evaporation) is important evidence in relation to control visits from the authorities.
- **SyreN+:** A technology, which will allow "designed fertilisation", i.e. the N:P balance of the slurry is adjusted with ammonia in accordance with the need for the crop, making additional spreading of nitrogen fertiliser unnecessary.
- **Syre NP:** Where more phosphorus and less sulphur are needed for the crop, for instance for basic fertilisation of maize, the acidification can, at least partly, happen with phosphoric acid rather than with sulphuric acid.
- **Syre FeMaN:** Manganese is added where needed, and iron sulphate can in addition to bring in an extra nutrient, also reduce the smell of the slurry. Other nutrients can also be added.

Acidification has according to Morten Toft, the owner of BioCover and inventor of the SyreN system, a potential to reduce the loss of 39,000 ton nitrogen to the environment. The loss of ammonia represents a big value, and the agriculture is according to Centre for Energy, Environment and Health (CEEH) responsible for almost 40% of all ammonia emission to the atmosphere. Ammonia is in the atmosphere undergoing chemical reactions into ammonium sulphate and ammonium nitrate, constituting a health problem due to carcinogenic effect.



Resulting figure from an Alfam model calculation, showing ammonia-N loss as a function of time after spreading.

## New tool on the “ATLAS”

### Interactive tool for estimating ammonia losses during field spreading of slurry

By Henning Lyngsø Foged, BalticCOMPASS WP4 leader

**The unique Alfam model visualises the importance of spreading technology and climatic conditions for the ammonia-N loss.**

The interactive Alfam model was developed in the project: "Ammonia Loss from Field-applied Animal Manure" (ALFAM). Read more about the project at <http://alfam.dk>.

You can calculate estimated ammonia losses by typing relevant values for application rate, slurry quality, spreading technology, temperature, wind speed, etc.

Slurry acidification with sulfuric acid during spreading, i.e. the SyreN system as mentioned above, is not one of the selectable technologies in the Alfam model, but has in Denmark been validated to reduce the ammonia evaporation with 50% for cattle slurry and 40% for pig slurry, compared to band laying system.

## AgroTechnologyATLAS

### Logo and banner

By Henning Lyngsø Foged, BalticCOMPASS WP4 leader

Our logo represents three symbols, namely an atlas - the longitudes and latitudes, the Baltic Sea region - the blue and green background, and technology - the spikes on the edge resembling a gear wheel.



We also have a banner, which you are welcome to place on your homepage with a link to the ATLAS.

Visit <http://agro-technology-atlas.eu/logo.aspx> to download the logo and banner files.



## Technical reports

### Study on biomass potential in Schleswig-Holstein

Innovation Foundation Schleswig-Holstein (previously known as the Energy Trust) conducted a study to estimate the energetic biomass potential up to year 2010 at Schleswig-Holstein, Germany. The study has now been updated by the Ministry of Agriculture, Environment and Rural Affairs to estimate the potential up to 2020.

The evaluation offers information on the level of biomass in the future energy mix in Schleswig-Holstein but should not be regarded as a comprehensive new study. The new evaluation enables a continuous data update process, thus improving the accuracy of any future forecasts.

You can download the study here:

[http://www.balticcompass.org/PDF/Reports/Energiepotentiale\\_English\\_formatiert.pdf](http://www.balticcompass.org/PDF/Reports/Energiepotentiale_English_formatiert.pdf)

### Environmental measures in Denmark

Knowledge Centre for Agriculture has produced a report with information about agro-environmental measures, including description of the measures and their environmental and economic impacts, and potential spread. The report is based on a merger of two Danish publications, and in this way made available for a broader audience of international readers.

The measures includes for instance measures as 1) anaerobic digestion of slurry, 2) slurry separation and SCIEN drainage technologies (in this report controlled drainage and constructed wetlands are mentioned), i.e. technologies, which according to BalticCOMPASS deserves a wider dissemination in the Baltic Sea Region.



Regulation well for controlled drainage, which is part of the "Win-win technologies for nutrient management" exhibition. Photo: Henning Lyngsø Foged.



*Example of a constructed wetland, a SCIEN drainage technology. It is in the report estimated that 1 ha of such constructed wetlands between the root zone in cultivated fields and streams or alike, has the capacity to remove 400 kg N from the aquatic environment, and that there could be established constructed wetlands with an area of 15,000 ha in Denmark. Photo by Frank Bondgaard.*

The descriptions and estimated economic and environmental effects in the report are seen from the perspective of Danish farmers' organisations, and may not be directly transferable to other countries and situations.

The report can be downloaded from here: <http://www.balticdeal.eu/measure/buffer-zones/?aid=3873&sa=1>.



Business Support on Your Doorstep

Enterprise Europe Network provides internationalisation and innovation services to small and medium sized companies. The network is a project co-financed by the European Commission and is being implemented as part of the Commission's Competitiveness and Innovation Framework Programme.

The European-wide network consists of 3,500 experts in 45 countries and reaches almost 23 million SMEs.

Click on the headings if you are interested in one of the shown partner searches, or visit <http://portal.enterprise-europe-network.ec.europa.eu/>

## Examples of current Enterprise Europe Network partner searches:



### [Process for nitrogen removal from sewage based on ultrasound technology \(12 IT 56Z7 3QBM\)](#)

A small Italian company has developed a new technology for the removal of the Nitrogen present in zootechnical and agriculture sewage, and in wastewaters. It is a mixed biological - chemical/physical process that, differing from traditional biological processes, can also operate during the winter as...

Listed under: Industrial Manufacture \ Other Industrial Technologies \ Agriculture

Created **01 October 2012**

Country of origin **ITALY**

**OFFER**

Technology



### [PS FP7-NMP-2012-SMALL-7: Nanoscale Sensors for Monitoring Environmental Nitrogen in Agriculture \(12 GB 45P2 3QFK\)](#)

A UK research centre is coordinating a project to develop nanotechnology-enabled sensors for real-time monitoring of N<sub>2</sub>O flux, soil nitrate and ammonium concentrations. The sensors will enable a step change in the ability to understand and manage nitrogen inputs and environmental impacts by increasing...

Listed under: Telecommunications \ Agriculture \ Measurement, Testing & Standards \ Environment

Created **25 September 2012**

Country of origin **UNITED KINGDOM**

**REQUEST**

Research



### [PS-FP7-SME-2013 - Development of novel micro-scale anaerobic digester \(12 GB 40n4 3QI3\)](#)

A UK R&D company is seeking an additional partner for an FP7-Research proposal under the call Research for the benefit of SMEs. They are developing a novel micro-scale portable anaerobic digester that will significantly reduce the cost of waste collection and will have an 11 day cycle. They are seeking...

Listed under: Physical and Exact Sciences \ Agriculture \ Measurement, Testing & Standards

Created **01 October 2012**

Country of origin **UNITED KINGDOM**

**REQUEST**

Research

### [A method for collecting animal excrement \(12 BE 0324 3PK6\)](#)

A Belgian inventor developed a method for collecting animal excrement and separating them from the urine. The invention allows the recycling and the use of excrement as materials for heating. The inventor is interested in license agreement, technical cooperation and joint venture.

Listed under: Building and Construction \ Agriculture

Created **01 August 2012**

Country of origin **BELGIUM**

**OFFER**

Technology



## Colophon

This electronic newsletter is sent out quarterly from <http://agro-technology-atlas.eu> with the purpose to support innovation and investments within agro-environmental technology in the Baltic Sea Region by publishing relevant knowledge about the issue to the Baltic Compass WP4 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 register at the web-page <http://agro-technology-atlas.eu> or notify one of the editors via e-mail.

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# BALTIC COMPASS

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



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## Upcoming events

### 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.

It will be possible to see the exhibition **“Win-win technologies for nutrient management”** - [http://agro-technology-atlas.eu/win\\_win\\_technologies\\_for\\_nutrient\\_management.aspx](http://agro-technology-atlas.eu/win_win_technologies_for_nutrient_management.aspx) - at the conference.

Among the events on the conference is a workshop on **“Qualitative and quantitative assessment of livestock manure: methods for efficient management and enforcement”**, jointly organized by BalticCOMPASS and BalticMANURE. Speakers at the workshop are Luisa Samarelli from DG ENV of the European Commission, Maret Oomen from the Dutch Ministry of Economy, Agriculture and Innovation, Christian Moschner from Kiel University and Hanne Damgaard Poulsen from Aarhus University.

More info: Visit <http://www.conferencemanager.dk/bluerbalticsea> in order to read more about the conference. The conference is unfortunately already fully booked with 250 participants.

### AgroMatch Manure Matchmaking

Venue: Agromek 2012, Herning

Date: 27-28 of November 2012

The event: Agromek and Baltic Manure organises a matchmaking event, focusing on manure management! Agromek is one of the largest agricultural fairs in Northern Europe and with the combination of a matchmaking event and a large fair you will get full value from your participation! A focused matchmaking like this is a very efficient way to meet potential cooperation partners and it provides a good platform for networking for both visitors and exhibitors.

The winner of the “Baltic Manure Handling Award 2012” will be announced at the fair. The purpose of the award is to recognize the companies and technology developers working in this business area, to promote promising new technologies and to broaden the knowledge of already existing technologies in the manure management area.

More info: Go to [www.b2match.eu/agromatch](http://www.b2match.eu/agromatch) and create a profile before October 19. After this date and until November 9, you can browse through the other participants and book one – to – one meetings of 30 minutes duration. You will receive your final meeting schedule via email prior to the event.

Participation in the matchmaking is free of charge.

### Meeting on mobile slurry separation and its contribution to the visions for energy supply and the role of farming at Bornholm

Venue: Bornholm, Denmark

Date: 6 December 2012

The event: The meeting will give an opportunity to see the mobile separation equipment in operation, as well as to participate in a debate with local politicians, farmers, representatives from the municipal waste handling and energy supply about mobile slurry separation and its contribution to the visions for energy supply and the role of farming at Bornholm. The meeting is organised in cooperation between BalticCOMPASS / Agro Business Park, BalticDEAL / Bornholms Landbrug, Biokraft and AL-2.

More info: The meeting will be held in Danish language. The final program will soon be posted at <http://agro-technology-atlas.eu>.

### Meeting on extrusion and biogas production from solid plant biomass

Venue: Foulum, Denmark

Date: 7 December 2012

The event: Is extrusion a technology that can ensure sustainable and profitable biogas production while providing a contribution to the development of organic agriculture, improved water environment and a sound use of buffer zones and similar areas?

Agro Business Park invites in cooperation with AU Foulum and Økologisk Landsforening interested to come and see an extruder in operation at AU Foulum's biogas plant, and subsequently obtain information about its operating economy and discuss perspectives for this pretreatment technology on biogas plants.

Agro Business Park has on behalf of the Baltic Compass project invested in the extruder. The BioM project has also contributed to the investment, and the plant is now fully operational and has been used in a few months for different types of biomass with good results. Competence Centre for Organic Biogas (KØB) collects practical and theoretical knowledge on biogas production for organic farmers and see extrusion as an interesting technology to ensure self-supply with both plant nutrients and energy.

More info: The meeting will be held in Danish language. The final program will soon be posted at <http://agro-technology-atlas.eu>.