



Baltic Slurry Acidification



EUROPEAN
REGIONAL
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Policy Recommendations

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Henning Lyngsø FOGED, Organe Institute, <http://organe.dk>, henning.lyngsoe.foged@gmail.com, +45 6141 5441

The logo for Organe Institute ApS, featuring the word "Organe" in a large, white, sans-serif font with a green shadow effect, and "Institute ApS" in a smaller, white, sans-serif font below it, all set against a green triangular background.

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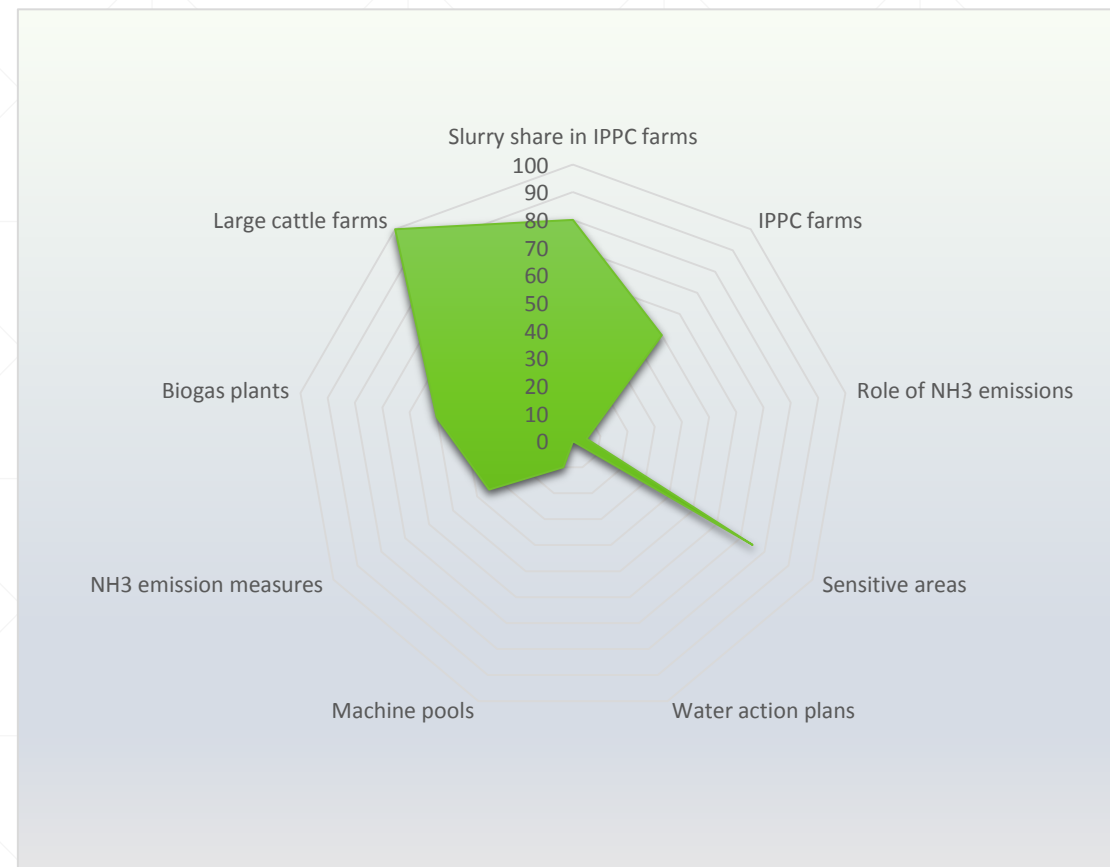
Slurry acidification in farmers

Benefits are utilised via fertiliser planning / use CropManager, and via use of nitrification inhibitor

- Investment costs, if not using in-field and in-storage acidification via contractor
- ~8 kg N more per ha in case of in-field and in-storage acidification, and 30 kg more N in case of in-house acidification
- Cost of sulfuric acid can be saved in purchase of mineral S fertiliser in case of in-field and in-storage acidification (sulfuric acid is the cheapest form of S fertiliser)
- Yield – no difference if the applied N and S amount in total is the same
- Soil pH – no difference, in some cases higher, other lower

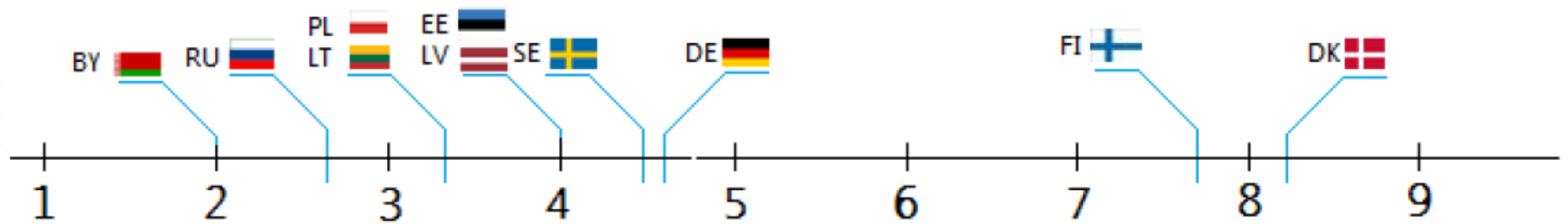
Market feasibility of slurry acidification

- Latvia produce app. 2.1 million ton slurry
- Market feasibility of slurry acidification is low in Latvia
- ...but things could change in the future



Legal situation about slurry acidification in Latvia

- Latvian legislation and support system does not favour slurry acidification in Latvia, but is not setting up any barriers for it.
- Latvia is the country of the Baltic Sea Region that is most behind defined ceilings (12%) for ammonia emissions, and something have to be done to reduce emissions. Slurry acidification could be one cheap and easy solution, and could be favoured via earmarked subsidies, and by equalising it with solid cover on slurry tanks and slurry injection, if such requirements are introduced.



Sustainability and One Health are interlinked

- Slurry Acidification Technologies (SATs) are cleantechs.
- They have direct environmental, social and economic impacts.
- In a wider perspective, they are of importance for ecosystem health, animal health and human health.



- Environmental: Resource economy, atmospheric N deposition, N leaching, ammonia emissions, GHG emissions,
- Social: Incidences of premature deaths, lung cancer,
- Economic: Investment costs, operational costs, health sector costs,...

The background and objective for Baltic Slurry Acidification

- The Baltic Slurry Acidification-project build on the facts:
 - The technologies are officially recognised in Denmark for more than 10 years as cleantechs with cost-economic effects on ammonia emissions (~40-64%) from manures in stables, stores and fields. The recognition as BATs builds on e.g. VERA verifications, and are reflected in DK legislation and support schemes.
 - EU has since early 2017 as well deemed SATs as BATs (for all Member States).
 - Other benefits are described in literature, such as reduced N leaching (~15-20%), reduced hydrogen sulphate (H₂S) formation (~70% - in-house acidification), reduced GHG emissions (~60% methane emission reduction – in-house acidification).
- The project objective:
 - **“Baltic Slurry Acidification aims to promote the use of SATs in the BSR”**. We did this by demos and tests to verify impacts under local conditions and in the same time spreading knowledge.
 - WP6 checked market potential and legal feasibility in the BSR countries, and developed recommendations on basis of this and other WPs.

Overall conclusion

Slurry acidification technologies (SATs) have the potential to give a major lift to the economy and the environment in the Baltic Sea Region, and in the same time give substantial greenhouse gas emission reductions:

- Implementing the potential for use of SATs in the Baltic Sea Region countries would have a positive net economic effect of in total € 2.2 billion per year, to which come an estimated N abatement value of M€ 147 per year related to the aquatic environment, and positive healthcare sector effects in Russia and Belarus.
- For the entire region, the implementation of slurry acidification in accordance with the estimated, weighed potential of 245 million tonnes of slurry, would annually mean a reduced ammonia emission of 167.1 Kt, and as a result of this a reduced atmospheric N deposition of 56,000 – 91,000 tonnes. In addition, the greenhouse gas emission would be reduced with 1.5 Mt CO_{2e}.

Annual savings from
realising
of SATs
weighed slurry
potential. All
figures in M€.

Latvia is among the countries with lowest net value, but highest need for ammonia emission reductions

On this basis, we recommend all EU Member States in the BSR to establish an expert working group with representation from relevant authorities and knowledge institutions in order to further clarify impacts and possibilities for implementing SATs use.

		Savings in the healthcare sector, M€	Value of reduced greenhouse gas emission, M€	Annual costs of investments in SAT installations, M€	Net value, M€	Additional, estimated value of N abatement, M€*
BY	NA	(102**)	19	-13.2	-113	9
DA***		58	19	-12.1	45.6	9
DE		2,105.4	23.1	-147.3	1,993.0	100
EE	0.4	2.0	0.2	-15	2.0	0.7
FI	0	7.0	0.6	-3.6	4.0	2.5
LV	0	2.2	0.1	-0.8	15	0.6
LT	0	18	0.2	-14	0.6	0.9
PL	0	155.5	3.1	-19.7	138.9	13.6
RU ¹	NA	(5.9****)	0.5	-3.0	-2.5	2.1
SE	2.7	56.3	19	-12.4	48.5	8.4
TOTAL	16.6	2,388.2 (+107.9)	33.4	212.7	2,220.3	147

¹5 regions in the North-Western part of Russia.

Politicians tools

Politicians have basically 2 tools for achieving a certain effect in the market:

- The carrot symbolises financial incentives / subsidies, as well as giving attractive advantages for certain actions = legal enablers.
- The whip symbolises regulations, penalties.
- It is in any case important that no legal barriers exists.



Thank you for your attention

Henning Lyngsø FOGED

Organe Institute

<http://organe.dk>

henning.lyngsoe.foged@gmail.com

+45 6141 5441