SuMaNu

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Background

Manure P surplus or deficiency when fertilized according to plant need (kg ha\(^{-1}\))

- < -5.0
- -5.0 - 0.0
- 0.0 - 5.0
- 5.0 - 10.0
- 10.0 - 15.0
- > 15.0

The average of Finland: 0.3 kg ha\(^{-1}\).

Ammonia and GHG emissions

Ylivainio et al. 2015

Tybirk et al. 2013
SuMaNu

Sustainable manure and nutrient management for reduction of nutrient loss in the Baltic Sea Region.

SuMaNu is an Interreg Project Platform clustering together four agri-environmental EU-financed projects.
Why SuMaNu?

To formulate more *holistic* best practices and policy recommendations for environmentally and economically sustainable manure and nutrient management in Baltic Sea Region.

1) **Synthesize** the results of participating projects to practical guidelines/best practices

2) **Formulate joint policy recommendations** for environmentally and economically sustainable manure management

→ **Dissemination** nationally and internationally by different channels
Project details

Partners

- **LUKE** - Natural Resources Institute Finland
- **RISE** – Research Institute of Sweden
- **HELCOM** - Baltic Marine Environment Protection Commission – Helsinki Commission
- **BSAG** – Baltic Sea Action Group, Finland
- **ECRI** – Estonian Crop Research Institute
- **ZSA** – Union Farmers Parliament, Latvia
- **CDR** – Agricultural Advisory Center in Brwinow, Poland
- **Organe Institute Aps**, Denmark
- **JKI** - Julius-Kühn-Institut, Federal Research Centre for Cultivated Plants, Germany

Work packages

- **WP1** Project management and administration
  - Leader: LUKE
- **WP2** Synthesis of project results into best manure practices in BSR countries
  - Leader: RISE
- **WP3** Policy recommendations for sustainable nutrient management and recycling
  - Leader: HELCOM
- **WP4** Communication
  - Leader: BSAG
Bonuses PROMISE

Bonus Promise: Risk analysis for recycling of organic waste materials

Objectives:

• Evaluate contents of harmful contaminants and P bioavailability in P-rich materials
• Introduce innovative technique (ASH DEC) to produce safe and transportable recycled P fertilizer
• Materials and analyses
  • Samples from different ashes from 29 biogas plants
  • Analyses of heavy metals, antibiotics, pathogens and P solubility and bioavailability
Conclusions

Farmer: Accurate P and antibiotic use, production of high-quality manure
• Avoid overusing P in animal diets. When spreading manure, consider soil P status and take manure P availability as 100%.
• Minimize the use of antibiotics for animals. Advertize your manure to neighbouring plant producing farms by telling about the value of organic matter in manure.

Politicians/administration: Clear intention to efficient recycling of nutrient-rich organic materials
• Digestion alone is not enough to resolve nutrient recycling. Phosphorus needs to be further separated to be transportable. Economic incentives for investing in processing facilities at farm and regional level
• Thermal treatments (inceneration, pyrolysis) eliminate almost all contaminants (ultimate option especially for sewage sludge)
GreenAgri

- GreenAgri: Environmentally-friendly Management of Organic Fertilizers in Agriculture

- Objectives:
  - Reduced nutrient losses through introducing and testing efficient practices in management of organic fertilizers
  - To improve skills and knowledge of ca 300 farmers from Estonia and Latvia by mainly «on field» activities for environmentally-friendly management of organic fertilizers.
  - Demonstrations, field days and 22 demo farms
Conclusions

• Farms have different technical and economical capacity for proper manure management. Adequate and knowledge based decision support is vital in order to rise knowledge level and deliver real changes in manure management practices
• Organic fertilizer (manure, digestate) is a resource with unequal distribution, availability and amount
• Different countries have different experiences. Knowledge and experience sharing between farmers is vital for creating added value to the farming practices
• Different policies by stating different goals sometimes conflict with each other. Complex solutions need to be found to meet the objectives for all policies
• Legislation and support schemes should emphasize the usage of environmental-friendly manure handling technologies.
Manure Standards

- Manure Standards: joint guidelines for manure data and its use in the Baltic Sea Region
- Objective: more harmonised manure data
- Impacts of manure use and regulation
- Impact assessment between current national manure data and new data provided by the methods developed
  - Environmental: potential change in nutrient fluxes, nutrient balances and emission potential when using the new data as the basis for manure fertilisation plans
  - Economic: potential change in e.g. required field area and manure storage capacity and the costs involved
  - Testing with pilot farms and on regional, national and transnational level
  - OUTPUT: recommendations for enhanced manure use via farm-scale nutrient bookkeeping and more effective policymaking using the new manure data
New guidelines

Implementation plan for the new guidelines in the Baltic Sea Region

• Based on the results, implementation plan for the joint guidelines is initiated in the HELCOM group on Sustainable Agricultural Practices (Agri)
  • Ministries, authorities and observers from farming and NGOs
• Ultimate joint target to
  • Enhance manure use
  • Reduce emissions from manure
  • Improved equality between farmers and countries in circular economy & emission reduction targets and actions to fulfil them
Baltic Slurry Acidification

• BSA: Reducing nitrogen loss from livestock production by promoting slurry acidification techniques in the Baltic Sea Region
• Livestock manure is the main source of ammonia emissions in the BSR
• Objective: Promote implementation of slurry acidification techniques
  • Methods: feasibility studies, field tests, investments, economic and environmental analysis, policy recommendations
Benefits:

• For the environment and thus, society
  • Reduced ammonia emissions by 50 – 75%
  • Reduced use of mineral nitrogen fertilizers
  • Cost effective emission reduction technology
  • Reduced methane emissions by + 90 % from slurry storage

• For the farmer
  • Increased nitrogen use efficiency of manure
  • Decreased dependency on mineral nitrogen fertilizers
  • Sulfur fertilization included
• https://www.youtube.com/watch?v=ol4u9LBB7v0
Thank you!