



DEVELOPING CRITERIA FOR THE USE OF PROCESSED MANURE IN THE CONTEXT OF THE NITRATES DIRECTIVE

SYSTEMIC – AGROCYCLE POLICY-SCIENCE WORKSHOP
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Introduction

- **SAFEMANURE** draft project proposals presented on 4/12/2017 by JRC to NEG
- **Objective** is to develop **criteria** according to which certain manure-derived fertilisers **may be used like mineral fertilisers** in NVZ, while continuing to protect the environment
- **Member State feedback** collected until mid-February 2018
- **Response** received from 12 MS





Tasks of the project

1. Development of a methodology for the establishment of safe processed manure criteria
2. Biogeochemical modelling input
3. Experimental assessment of release potential to water resources
4. Proposing safe processed manure criteria





Selection of priority processed materials

High priority

- Ammonium sulphate and nitrate
- RO mineral concentrates
- Precipitation salts

Medium priority

- Liquid fraction of digestate

Access to representative materials will be required!





Parameters relevant to determine the agronomic efficiency

High priority

- Nitrogen forms in processed manure
- Soil characteristics
- Crop characteristics
- Climate

Medium priority

- Macronutrients in processed manure
- Micronutrients in processed manure
- Other chemical and physical characteristic of manure





Parameters relevant to determine the possible environmental impacts

High priority

- Nitrogen forms in processed manure
- Soil characteristics
- Climate

Medium priority

- Macronutrients
- Micronutrients
- Biological agents
- Compounds of emerging concern





Action mechanisms relevant to determine the possible environmental impacts

High

- Nitrogen losses to water via leaching and/or run-off
- Nitrogen accumulation in the soil
- Nitrogen losses to the atmosphere from application or soil transformation processes
- Application methods

Medium

- Other nutrient losses
- Heavy metal pollution
- Greenhouse gas emissions of non N containing compounds





Reference conditions

- ammonium and nitrate based chemical will fertilisers be used as reference standard.
- conditions will be based on the permissions and restrictions that apply to mineral/chemical fertilisers in Nitrates Vulnerable Zones





Review of existing scientific and technical literature

- Composition of processed manure
- Release kinetics of nitrogen from different processed manure materials
- Environmental and or human health issues
- Differences in nitrogen plant uptake and nitrogen losses for the different type of processed manure materials, compared to raw manure and mineral fertilisers





Biogeochemical modelling

- The JRC has developed a process-based pan-EU biogeochemical modelling platform that **simulates carbon and nitrogen flows** within soil and between soil, the atmosphere and vegetation.
- Verify the environmental consequences of substituting mineral fertilisers with processed manure materials with regard to:
 - their nitrogen leaching potential to water (groundwater and surface water) under the main soil types in the EU, with specific focus on all NVZ;
 - their behaviour in the soil for the main soil types in the EU (in particular their effect on the soil carbon cycle);
 - their atmospheric emissions (in particular N₂O);
 - crop yields (for major crop types).





Release potential to water resources

Analyses include:

- Nutrients: N,P,K
- pH, Organic matter
- Heavy metals, in particular Cu and Zn
- Multi-residue analyses: pesticides, pharmaceuticals, PAH, endocrine disrupters

Testing phases:

- Material collection and comparison treated vs untreated manure
- Assessment of run-off behaviour and releases (included testing in autumn and spring), in those cases where there is access to fields
- Development of a standardised testing protocol addressing the nitrogen release characteristics



Next steps

Development of methodology proposals by JRC	5 June 2018
Feed-back by MS on methodology	July 2018
Final methodology to be presented at Nitrate Expert Group	7 September 2018
Release experiments	Autumn 2018, spring 2019
Biogeochemical modelling, lab trials, meta-analysis of literature, criteria development	Starting autumn 2018
Stakeholders workshop to present results of the project	December 2019





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Thank you for your attention

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