



Document title	New synopsis - Develop incentives to promote applying slow- and controlled-release fertilisers
Code	2-2
Category	INF
Agenda Item	2 – Technical review of synopses
Submission date	8.6.2020
Submitted by	Secretariat
Reference	

Background

This document contains a new synopsis relevant for the Agri group: “Develop incentives to promote applying slow- and controlled-release fertilisers”.

Action requested

The Meeting is invited to take note of the new synopsis.



Template and guidanceTitle Develop incentives to promote applying slow- and controlled-release fertilisers (SRF/CRF)
Submitted by: Poland
Description of measure <p>The proposed measure concerns the use of slow- and controlled-release fertiliser (SRF/CRF), particularly, in areas with a high risk of nutrient losses. From this type of fertilizers, release of nutrients into the environment occurs slowly, in a controlled manner, addressing specific plant needs better. SRF/CRF fertilizers have a much slower release rate of nutrients, compared to well-soluble, rapid mineral fertilizers, and their properties can be modified during the production process. Promotion and financial support of using SRF/CRF with the intention of applying them in areas particularly vulnerable to nutrient losses could result in a decrease in the load of nutrients discharged from soil into the Baltic Sea.</p>
Activity: Agriculture
Pressure: <i>Input of nitrogen</i>
State: Nutrients
Extent of impact: <p>The proposed measurement would have a considerable impact on agriculture in all the Baltic Sea Region countries. Especially, in areas with a high risk of nutrient losses.</p>
Effectiveness of measure <p>SRF/CRF fertilizers have a much slower release rate of nutrients, compared to well-soluble, rapid mineral fertilizers like as ammonium nitrate or urea, ammonium, phosphate or potassium chloride. Such delay of initial availability or extended time of continued availability may occur by a variety of mechanisms. These include controlled water solubility of the material by semi-permeable coatings, occlusion, protein materials, or other chemical forms, by slow hydrolysis of water-soluble low molecular weight compounds, or by other means.</p> <p>The use of slow- and controlled-release fertilizers decreases nutrient losses and enhances nutrient use efficiency (NUE). A decrease of 20 to 30% (or more) of the recommended application rate of a conventional fertilizer is possible when applying controlled-release fertilizers while maintaining the same yield. Controlled-release fertilizers improve the uptake of nutrients by plants through synchronized nutrient release, and significantly reduce possible losses of nutrients (up to 45%), particularly of nitrate-N by leaching and volatilization losses of ammonia. This substantially decreases the risk of environmental pollution. Their use also contributes to a reduction in N₂O emissions.</p> <p>The most important disadvantages of SRF/CRF is that the manufacturing cost of most coated or encapsulated controlled-release fertilizers is considerably greater than that of conventional mineral fertilizers. This has prevented their wide use in mainstream agriculture.</p>
Cost, cost-effectiveness of measure:
Feasibility:

Follow-up of measure:

Background material:

References

Shaviv A., Mikkelsen R. I., 1993, Controlled-release fertilizers to increase efficiency of nutrient use and minimize environmental degradation- A review, *Fertilizer Research* 35: 1-12.

Shaviv A., 2001, Advances in controlled-release fertilizers, *Advances in Agronomy*, 71, 1-49.

M.E. Trenkel M. E., 2010, Slow- and Controlled-Release and Stabilized Fertilizers: An Option for Enhancing Nutrient Use Efficiency in Agriculture, *International Fertilizer Industry Association (IFA)*, 163 ss.

J. Chen et al., 2018, Environmentally friendly fertilizers: A review of materials used and their effects on the environment, *Science of the Total Environment* 613–614, 829–839.