

Nutrient Management and Nutrient Recovery Thematic Network

NUTRIMAN

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1. Introduction – In the transition from a fossil reserve-based to a bio-based economy, it has become a critical challenge to close nutrient cycles and move to a more effective and sustainable resource management, both from an economical and an environmental perspective.

The production and transport of mineral fertilizers requires significant amounts of fossil energy. Hence, the dependency of agriculture on fossil reserve-based mineral fertilizers (especially N, P, and K) must be regarded as a very serious threat to future human food security. On the other hand, estimates of phosphorus reserves are pessimistic. Based on population growth and future demand for nutrients, it is expected that depletion will occur within 100 to 300 years. Societal impact is expected to occur much sooner than the expected time of depletion, in accordance with peak theory which indicates that resource scarcity will have a major impact on product pricing.

At the same time, the agricultural demand for mineral fertilizers is continuously growing, mainly due to the increasing world population, the rising meat consumption, and the cultivation of energy crops. In fact, the FAO reported a five-fold increase in fertilizer consumption between 1960 and 2005 and also projects continued increase in the coming years. This tension between resource scarcity and increasing demand will continue to considerably push up the prices for nutrient resources in the near future.

Despite these unfavourable prospects, a large amount of minerals is dispersed in the environment through processing or disposal of waste streams. In addition, the intensification of animal production and the resulting manure excesses, combined with a limited availability of arable land for the disposal of waste (manure, sludge, etc.) and the excessive use of chemical mineral fertilizers, has led to surplus fertilization and nutrient accumulation in many soils worldwide. These phenomena have caused environmental pollution.

A new global effort is needed to draw a new scenario where improved nutrient use efficiency and, at the same time, reduced nutrient losses provide the bases for a greener economy to produce more food and energy while reducing environmental impact.

2. NUTRIMAN proposal - Agriculture and food industry are having a high dependence on resources in their production and striving for long-term sustainability. In this context there is an urgent need to optimise resource use and smooth the transition to a knowledgedriven agriculture. The NUTRIMAN is a Nitrogen and Phosphorus thematic network compiling knowledge “ready for practice” for such recovered product applications, practices and technologies, interconnecting applied science and industrial practice, for the user interest and benefits of the agricultural practitioners. There is an urgent need to spread knowledge and network information towards agricultural practitioners about the insufficiently exploited N/P recovery innovative research results (technologies, products, practices). The project objective is to improve the exploitation of the N/P nutrient management/recovery potential for the ready for practice cases not sufficiently known by practitioners. Our action will open new opportunities for farmers to develop connections between applied researches with practical usefulness results and farming practice in the priority area of nutrient management and nutrient recovery. Uses a bottom-up approach to identify incentives and bottlenecks for adoption and to prioritise between technologies/products and will ensure larger willingness to adopt innovations and improve multiplier effects. Large scale take up of the recovered N/P innovative fertilisers targeted, produced from un-exploited resources of organic or secondary raw materials in line with the circular economy model, and economical/environmental efficiently used by farmers. Effective dissemination and exploitation promoted by multilingual web

platform, other communications and best practice field demonstrations for farmers. This action is contributing to the successful deployment of the vast reservoir of existing scientific/practical knowledge on the N/P recovery theme, including multi lingual abstracts in EIP-AGRI format.