NWO SIA RAAK-MKB project

Circular Cattle Manure

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Background

The objective of this 2-year research project is to synthesize a drop-in phosphorous-rich mineral compound and a phosphorous-poor organic compound from cattle manure for the application in agriculture. Market needs are used to determine the technical and cost specifications of these products.

The Netherlands harbors a large and intensive animal husbandry sector which results in a surplus of cattle manure. Against high costs this surplus is exported to neighboring countries whilst innovative firms consider this surplus as a potential bio-resource for the development of circular and biobased products.

"From waste to products"

Together firms, research institutes and universities will carry out market research and develop an innovative manure processing unit that forms the fundament of the manure biorefinery concept. This unit produces drop-in (i.e. market-driven) products from manure by combining existing and new biomass processing technologies (such as anaerobic digestion and active coal absorption). The outcome of this project is a design and validation of a conceptual manure refinery process for the valorization of cattle manure as a sustainable solution for the manure surplus in the Netherlands.

Fig 1. Cattle manure as a resource for developing circular products

Activities

- Test and evaluate combinations of new and existing manure refinery techniques
- Interviews with farmers, firms, experts and stakeholders
- Assess economic (business canvas model) and ecological (life cycle analysis) aspects
- Review of professional and scientific literature

Fig 2. Application of circular minerals in agriculture (example)

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