

Activities

The Slurry Concentrator separates livestock slurry into two phases: a semi-liquid phase (concentrating the majority of the organic matter and nutrients) to be transported and applied to distant fields where nutrients are not available; and a liquid phase (with a low nutrient concentration) to be applied in a nearby field.

Further details

- € **Total budget:** € 270.967
- Total financed:** € 83.109,07 (EU); € 110.167,83 (DARP)
- Main funding source:** Rural Development Program 2014-2020 for Operational Groups
- Rural Development Programme:** 2014ES06RDRP009 Spain - Rural Development Programme (Regional) - Catalunya

🕒 Ended, 2015 - 2017

📍 Catalunya, Spain

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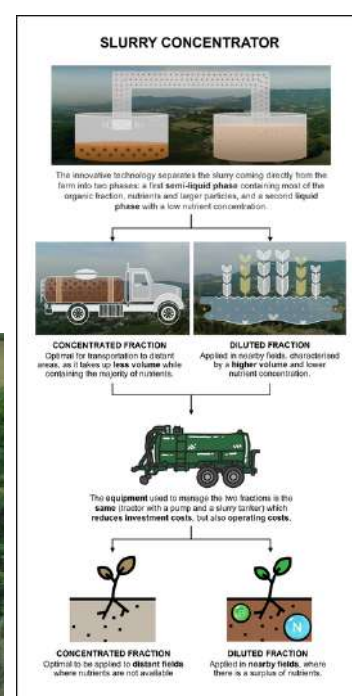
Slurry Concentrator

Slurry Concentrator to enhance the efficiency of soil nutrient application

Objectives

- Implement nitrogen monitoring using equipment/sensors to track treatment efficiency and distribution in two phases.
- Minimise the installation and operating costs, including energy consumption.
- Ensure that the concentrator materials are durable and suitable for harsh environments.
- Evaluate its integration into existing facilities with minimal structural modifications.
- Reduce the cost of transporting agricultural nutrients such as nitrogen, phosphorus, potassium and organic matter.
- Assess the environmental impact and economic viability using LCA and Life Cycle Costing (LCC) tools.

Slurry Concentrator



Results

The concentrated effluent can be more efficiently transported and applied to any farmland, while the diluted effluent can be used on surrounding fields.

Specific outcomes:

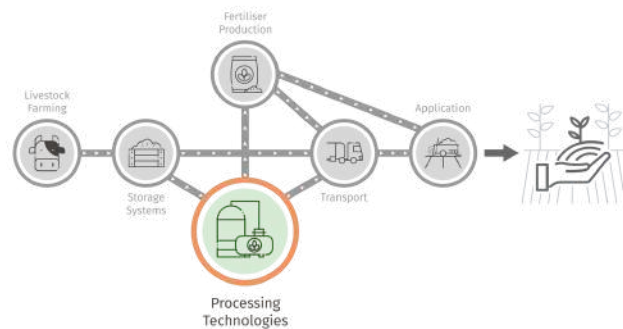
- Reduction of slurry volume by 20-30%, making transport more efficient.
- Concentrated fraction retains 85-95% of total solids, 45-55% of total nitrogen, and 85-95% of phosphorus.
- Low energy consumption with costs as low as € 0,0351 per m³.
- Using the same tractor and slurry tanker for both fractions cuts investment and operational costs, and reduces management time.
- Integrated online devices track nutrient content in real-time, facilitating precision fertilisation, minimising nutrient losses, and reducing emissions.
- The system simplifies nutrient application by providing easy-to-handle liquid fractions, optimising soil health and productivity.
- The mobile design allows for shared use between farmers or within cooperatives, spreading the costs of investment and maintenance.

Context

In regions with high livestock density, there is an imbalance between the volume of nutrients generated and the farmland available for their application. The main challenge of Slurry Concentrator was to improve nutrient management from livestock waste and to reduce management costs for farmers, especially in areas where there is an excess of manure in relation to arable land.

Location in the
Nutri-Know value chain

Slurry
concentrator with
continuous total
nitrogen data
collection



Nutrient recovery (especially phosphorus, which is considered by the EC as a critical raw material) is one of the main challenges for the agri-food sector at EU level.

While nutrients are essential for crop production, they are also the cause of serious soil, water and atmospheric pollution problems if not properly managed and applied to land.

Slurry management is a major challenge for farmers, especially for small and medium sized farms, and there is a real need to implement solutions to improve and facilitate their application to land as fertilisers and, if necessary, their export to other nutrient-poor areas.



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