

Technology for N&P recovery as urine and solid soil improver from calves manure with “Geamix” housing system



Keywords: • Separation at source • Urine • RENURE • Soil improver • Calves housing system

Key facts:

- **Category of the technology:** Physical-chemical nitrogen recovery from manure: separation at source
- **Input:** Raw manure from calves
- **Output product(s):** urine and solid organic soil improver
- **Available capacity:** manure from 1000 calves
- **Focusing geographical areas:** The Netherlands
- **Technology status:** TRL 6
- **EC/MS Authority permits:** Not applicable



Summary of the technology:

The calves stay on a steel slatted coated floor. The grid has a manure passage of approximately 50%. Manure hardly adheres to this coating. The floor emission is thus reduced. The manure is then placed on a perforated, urine permeable manure belt that lies under the grid. The manure belt discharges the solid manure several times a day to an air-tight collection outside the house.

The urine falls completely through the perforated manure belt onto a coated sub-floor that is sloped and contains a urine trough at the lowest point. This pure urine then flows away to a closed collection outside the barn. Once a day, the coated sloping subfloor is sprayed with water so that no sediment formation occurs.

The solid manure contains 40 % dry matter due to the direct way of separating. Almost no energy is needed to achieve this percentage (only electricity costs for running the manure belt). For the thick fraction, a device is being developed that adds quicklime to the manure and further dries the manure with stable air (on a belt dryer) and then crumbles it. This creates an exportable crumb with a dry matter percentage of 85 %. This high-quality fertilizer can be sold both regionally and internationally (because it is hygienic). To capture the ammonia emission from the solid fraction during the drying process, this process is connected to an existing air scrubber.

Competitive position and advantages:

- Low ammonia emission calves housing system
- Separation at source of urine and solid manure
- Produces exportable solid organic soil improver
- Produces urine as a potential RENURE fertilizer. The urine meets the proposed RENURE criterium C/N<3.
- The production and usage of RENURE fertilizers allows farmers to process their (excess) livestock manure into a RENURE fertilizer. This means that application will no longer be defined as livestock manure in the Nitrates Directive. This means application will no longer be limited to 170 kg N/ha.

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