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Concept development centrifugal manure separator for source-based slurry separation on the farm

Cattle slurry consists for more than 90% water. The primary purpose of mechanical slurry separation is producing a solid fraction with high levels of organic matter and minerals and a low moisture content.
The mechanical centrifuge process has the most potential for the further development of an effective and efficient separation of slurry. One can think of a higher dry matter content in the solid fraction by an improved self-cleaning filter system whereby also the maintenance and follow-up processes of the manure separator can be easier and will cost less.
A flexible application, such as for an in-line separation process in / outside the stable, therefore belongs to the possibilities whereby the total manure drainage and the manure separation system can be further improved.

Innovation Support (***IS***) has the mechanical idea and concept developed for source-oriented centrifugal manure separation on the farm. The supply of the slurry from the stable can before or during the import in the centrifuge process be mixed with a material which has a filtering property, whereby:

- the moisture content of the solid fraction decreases and the phosphate content increases
- and a reduction of nitrogen in the liquid fraction by absorption in the filtering material

The solid fraction, a mixture / residue manure and filtering material, is screwed out of the rotating mechanical filter by a rotating wormscrew, while the liquid fraction under the influence of the centrifugal forces by the rotating mechanical filter is drained. The difference in dry matter content between the liquid fraction and the input slurry is an important measure of the performance of any type of manure separator. The greater the difference, the better the separation.
The government and the market want a greater difference in the dry matter content which can be achieved with this centrifugal manure separator concept, resulting in:

- relatively much phosphate in the solid fraction, sufficiently dry matter content, solid fraction stackable, smaller volume manure drainage → LESS manure drainage cost
- relatively few nitrogen in the liquid fraction, can stay on the private land, works better than nitrogen in normal slurry liquid fraction → LESS fertilizer cost
- liquid fraction can be made suitable, after further purification, for discharge on surface water → LESS burden on the environment

The focus on continuous source-oriented farm manure separation gives:

- relatively small separation system / lower investment and cost per cubic metres
- stable costs throughout the year
- minimum amounts of manure in the pits
- minimum ammonia formation
- improving stable climate / reduction ventilation volume
- simple and minimal maintenance
- energy extraction from organic manure scrap

The development of this centrifugal manure separator concept meets the future image of the NL- LTO (NL - Agriculture Horticulture Organization), that slurry is a source of minerals, carbon and renewable energy. The value out of slurry must be so addressed that the minerals be used optimally, where:

- fertilizer use is minimized
- greenhouse gas emissions at traditional use be greatly reduced
- if desired, sustainable energy is created

then slurry gets a “positive value” and this will improve the role in the region and country of agriculture significantly.

For more information, please contact us via www.Innovatie-Support.com