EIP-AGRI practice abstract

Short title:

Technology for N recovery as enriched pelletized digestate from animal manure + biowastes with "Arbio and NPirriK-project" co-digestion + separation and backmixing process

Summary:

The digestate of Arbio (biogas installation digesting 90 kilo tonnes manure and organic wastes/y) is separated into a liquid and a solid fraction. The liquid fraction is concentrated via Reverse Osmosis (RO; Turbin). RO is a process of physical separation in which all particles and macromolecules are retained under pressure leading to 60% water and 40% 'concentrate': an ammoniacal nitrogen liquid (animal manure-status Arbio). This concentrate is then 'back mixed into the drying of the solid fraction digestate - mixing of the mineral concentrate (N and K) over the solid fraction just before it goes to a (belt) dryer. If, finally, pelletised this results in an easy to distribute fertiliser-pellet with an optimised (higher) N/P-content - 5,5% N (TN) of which 50% mineral N -, and 2,8% P2O5. At the end of 2019 the full industrial scale of the NPirriK post-treatment flow can realise about 3000 tonnes/y of the high N/P-pellets. The market price for the pellets is estimated to rise due the optimised post-treatment add-on from 25€/ton to 45€/ton. The second RO-stream - water - can under certain conditions be either discharged into surface water, used as process water or, in case of drought, be used to irrigate nearby agricultural plots. The conversion to the NPirriK-concept allowed for a considerably lower amount of digestate to be treated via a biology, hence lower N destruction, lower transportation cost and overall lower energy costs.

For more information: https://nutriman.net/farmer-platform/technology/id_269

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