EIP-AGRI practice abstract

Short title:

Technology for P recovery as struvite starting from pig manure digestate with fluidized bed crystallization system

Summary:

Studies to recover and valorize the by-products coming from the agrofood production, reinforcing a more competitive and sustainable economic model through the efficient use of resources.

Benefits arise from this technology is food waste streams valorization to bioenergy and bioproducts and recovery of the digestate obtained in the anaerobic digestion process and struvite.

The crystallization of N and P in the form of magnesium phosphate and ammonium hexahydrate or struvite, is one of the possible techniques used to eliminate and/or recover nutrients from the digestate, obtaining a product that can be applicable as a base in ecological fertilizers.
Several factors influence the precipitation of struvite: the chemical composition of the residual effluent (organic matter, ionic strength), pH, the molar ratio of $Mg:N\text{-}NH_4:P\text{-}PO_4$ (Mg:N:P), the degree of supersaturation, temperature and the presence of foreign ions, such as calcium.
The reaction takes place at room temperature (25-30 ºC), so it is not necessary to make a large energy consumption and does not need the addition of water.
The raw materials used in this technology are pig slurry digestate, magnesium salt and NaOH.

The technology has a sufficiently relevant scale (crystallization reactor with a capacity of 50 L), so that the results can be used for subsequent implementation on an industrial scale.

For more information: https://nutriman.net/farmer-platform/technology/id_256