

## EIP-AGRI practice abstract

### Short title:

Technology for N recovery as inorganic fertilizer starting from liquid fraction of manure, digestate or other waste streams with "Detricon" stripping and scrubbing process

### Summary:

Detricon stripping/scrubbing recovers ammonia from liquid fraction of manure, digestate or other liquid waste streams with more than 0.1% ammonia nitrogen. The technology produces a technical pure-end product, ammonium nitrate, which can be used to enhance the growth of corn, grass, vegetables in conventional farming. Stripping/scrubbing by Detricon is an energy efficient and economic interesting technology to produce locally a pure nitrogen fertilizer without other nutrients. It is an example of circular economy.

First, the manure needs to be mechanically separated, then the liquid fraction is transferred to the stripper/scrubber. Under the influence of pH and temperature, the ratio ammonia/ammonium can be increased so that the ammoniacal nitrogen can volatilize more quickly. By blowing in air, the volatile ammonia is removed from the liquid fraction and the nitrogen can be recovered. The air from the stripper, enriched with ammonia, is chemically bound to ammonium nitrate by nitric acid in the scrubber. The concentration of ammonium nitrate is determined by the initial amount of water in the scrubber and the amount of nitric acid added during the process. In the Detricon process the concentration is set to 52 mass% ammonium nitrate which corresponds to 18 mass% N. After the ammonia in the scrubber is chemically bound, the ammonia-poor (<20 ppm NH<sub>3</sub>) air goes back to the stripper. The Detricon technology produces 100-5.000 ton/year inorganic fertilizer.

The cost is 300.000 euro for 3 m<sup>3</sup>/h stripping/scrubbing and 550.000 euro for 8 m<sup>3</sup>/h stripping/scrubbing, with operational fee at 0,9-1,2 euro/ton depending on the market value of the produced liquid ammonium nitrate.

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