

Technology for N recovery as microfiltered slurry/digestate/sludge starting from raw slurry/digestates/sewage sludge with microfiltration system



Keywords: • *digestate* • *microfiltration* • *nutrient recovery* • *microfiltered digestate*

Key facts:

- **Technology category:** microfiltration of digestates
- **Input material:** livestock slurry, digestates, sewage sludge.
Output products: microfiltered digestate
- **Capacity:** Working capacity is estimated between 5 and 10 m³/hour. But it depend on farm organization. Indeed it can also be used in small farms treating few tons per days (<10 t/day).
- **Focusing geographical areas:** ITALY
- **Technology status:** TRL7 (system prototype demonstration in operational environment).
EC/MS Authority permits: -



Summary of the technology:

The purpose of the treatment is to obtain a microfiltered phase of the digestate (or livestock slurry or sewage sludge), with particles smaller than a few microns (usually 25-50 microns), so that it can be used in mixture with irrigation water even in irrigation systems with drippers or small nozzles. By-products of the treatment are a solid palable fraction and a dense fraction but the largest proportion of the raw digestate becomes microfiltered phase (both in weight and volume).

Electric current for separation and microfiltration of digestate is almost 25-30 A. No water is used in the digestate treatment. Microfiltered digestate is then injected in the irrigation water line and distributed by means of drip lines. This permits to save water and energy compared with the usual sprinkler irrigation.



Competitive position and advantages:

Digestate_100% is a technical innovation effectively applicable in farms; an integrated system capable of converting the burden of digestate into a valid business resource.

The microfiltration of digestate can be optimally combined with the drip lines for fertigation, as it is able to guarantee a microfiltered fraction in which all particles larger than a defined diameter (which depends on the spacing sieve) are excluded so they can't clog up the drippers.

Thanks to its capability to maximize the fertilizer efficiency of the digestate, distributing it on growing crops, the system allows to significantly reduce the use of mineral fertilizers (up to zero).

It is potentially useful not only in the field of industrial herbaceous crops but also on horticultural and fruit tree crops, even in organic farming. The concepts of circular economy become of concrete application in farms.

NH₃ and N₂O air emissions can be reduced significantly thanks to digestate dilution and slow distribution. NO₃ leaching/runoff can be reduced too, compared to conventional digestate application.

Contact

Name: Sergio Piccinini

Company: CRPA - Centro Ricerche
Produzioni Animali

Web: www.crpa.it

e-mail: s.piccinini@crpa.it

