

TRAINING MATERIAL

Title:

Liquid and solid (dried) fraction digestate from manure and energy maize by "Agrogas" process (ID: 264)

Training:

What is the product?

The presented Agrogas fertilisers are post-treated digestates (result of anaerobic digestion of organic (industrial) wastes, energy crops (maize) and/or manure) more particularly a liquid fraction and a dried fraction. The liquid fraction (of the vegetal input process line) comes from a screw press separation of the digestate and has an 'other organic fertiliser' status (>< animal manure). It is a dark and liquid (1,6-3% dm) organic fertilizer and a source of predominantly nitrogen and potassium. The dried fraction is the end product of a thermal drying process of the sieve belt pressed solid fraction coming from animal input digestate line. It is a dark, dry (80-90% dm) and powdery/coagulated organic fertilizer with animal manure status and a source of nitrogen and mainly phosphor.

Who is the vendor of the product/technology?

Agrogas (<https://www.facebook.com/Agrogas>) is a Flemish digester located in Geel (B)

Which other product/technologies are provided by the vendor?

Agrogas produces overall 60.000 t/y liquid fraction digestate (including concentrate, thickened effluent), dried digestate (3000 t/y), and 1000 à 2000 t/y digestate and/or solid fraction digestate.

Which are the advantages of the product and the problems addressed?

Digestates are prime examples of a circular economy where energy is won and nutrients recuperated at the same time. The digestates in Flanders conform strict quality requirements, have fertilizing and soil improving qualities, and are – in hygienised form – free of pathogens, insect larvae and weed seeds. Dried digestate improves soil biodiversity by increasing carbon levels. Furthermore dried digestate by its high dry matter-content also guarantees an optimized storage, shelf life and transport.

Which is the nutrient content of the product?

The nutrient contents for the liquid digestate fraction of Agrogas are within a fork of 5,7-9,9 N% (dm), 2-3% P₂O₅ (dm), and 15-22% K₂O (dm). The nutrient contents for the dried digestate fraction of Agrogas are within a fork of 3-5 N% (dm), 4,5-7,5% P₂O₅ (dm), 1,6-3,1% K₂O (dm).

Which equipment and methods can be used to apply the product?

Digestates can, according to the type and post-treatment, be used in arable land farming, horticulture and greenhouses on crops such as cereals, maize, potato, sugar beet, grapes, permanent crops (fruit trees), grassland, etc. Organic fertilisers such as digestate can be broad-based or locally applied. In the case of a spread application, the fertiliser is evenly distributed over the entire field. With local application, specific point, row, belt or plant hole fertilisation is applied.

When applying dried digestate in the field, you may experience practical problems due to dusting – rainy weather may be preferred. Application through e.g. classic lime spreader or top dresser. Liquid digestates are best applied with precision application equipment injecting directly into the soil (e.g. trailing hose/shoe injector) or applying on the surface e.g. with a bandspreader.

How to use the product?

The application dose depends (in general & in particular in Flanders) on type of farm, region (N), soil (P), crop, etc.. Also elements such as application season and the cultivation of catch crops influence the application. Each digestate product from each producer has a specific composition, which is obligatory monitored at least 4 times a year for nitrogen and phosphorus. The most recent analysis values determine the maximum application rate on agricultural land. It is recommended to set up a fertilisation plan based on a recent soil analysis and the corresponding fertilisation advice. As an animal manure the application of Agrogas' dried digestate is limited to a maximum of 170 kg N/ha/y (on non derogation farms). The liquid fraction digestate from Agrogas exists mainly in a vegetal ('other organic fertiliser) status offering to be applied above the animal manure threshold of 170 kg N/ha/y.

Furthermore a system of counting the available nitrogen can be in place (e.g. Flanders) taking into account the amount of fertiliser nitrogen which the crop can put to good use the first year. In other words one has to count with the nitrogen use efficiency (plant availability) of the dried digestate and the liquid digestate fraction for nitrogen being respectively :

- 30% (solid animal manure status in Flanders)
- 60% (liquid animal manure/other organic fertilisers in Flanders)

Particularly for dried digestate what ultimately defines the maximum application rate is the P-fertilisation limit: for most soils (in Flanders e.g. phosphate class III or IV) the maximum application rate will vary between 45 and 70 kg P₂O₅/ha/y (except for grassland). For most applications, dried digestate provides a good basic fertilisation. An extra nitrogen fertilisation is usually needed.

Typical doses would be on average 30 tonnes/ha/y (depending on soil, season, crop,...) for liquid fraction digestate and on average 2 tonnes/ha/y (depending on soil, season, crop,...) for dried fraction digestate.

Which are the authority permits and in which EU countries?

All Agrogas products applied on land have the required permits from the certification body and authorities, respectively (Vlaco (certificate 1/y) & FOD (1 every 5 y)) to guarantee its quality and allow its use. In the Fertiliser Regulation – coming into force in 2022 – the dried digestate may under conditions be considered for categorisation as PFC 1 A (solid organic fertiliser) or PFC 3 A (organic soil improver).

How much does it cost?

The digestates from Agrogas (and other similar Flemish digesters) are very competitively priced multi-nutrient organic fertilisers with a cost ranging roughly between -10€ and 5€/t for liquid fraction and between 15 and 35€/t for dried fraction.



For more information: https://nutriman.net/farmer-platform/product/id_264