

## Organic and organo-mineral fertilizers for precision farming



Agrogeo Ltd. was founded by 9 members in 1988. The members are as follows: Hungarian State Geological Institute, Budapest; Viniculture Research Institute, Kecskemét; BÁCSVÍZ Rt., Kecskemét; Directorate of the Kiskunság National Park, Kecskemét; Collage of Horticulture, Kecskemét. According to the current EU classification, the organisation type of Agrogeo Ltd. is an innovative small enterprise. The field of activity is focused on organic based fertilizer development and its use in precision farming furthermore providing services to develop certificated products from agricultural, agro-industrial, food processing wastes.

Human resources of Agrogeo Ltd comprise Győző Szolnok (MSc, agricultural engineer), Tamás Szolnok (MSc, agricultural engineer in environmental management), Zoltán Horváth (PhD, scientific associate for plant protection) and Adrienne Mészáros (MSc, economist).

### GRANOFARM EIP AGRI Croup

Agrogeo coordinates an innovation project; identification number: 1924493826, called Innovative organic fertilisation adapted to precision farming: 2019-2023.

In 2018, GRANOFARM Innovation Operational Group was founded by Agrogeo Ltd. and Hungarian University of Agriculture and Life Sciences, GRANOFARM group also comprises 1 accredited agricultural consultant and 3 farmers in order to develop a new procedure for precision fertilisation.

The consortium has developed an innovative procedure to improve precision application and efficiency of organic and organo-mineral fertilizers using organic coating components are allowed in organic farming. This invention aims to improve durability and plant nutrition efficiency of pelleted and granulated organic, organo-mineral fertilizers that are completely suitable for precision application in the same pass of sowing.

### Invention to solve effective application of granulated and pelleted organic fertilizers on arable land

Subject: multi-step preparation and coating of organic and organo-mineral fertilizers to improve their quality and efficiency adapted to precision farming.

Current status: prototype available for demonstration

The invention provides new generation of organic and organo-mineral fertilizers using organic-readily biodegradable coating materials in order to improve quality, nutrient supply, duration.

The procedure includes preparation of pellets and granules to become more adaptable for fertiliser spreader of seeding machines that are based on:

- Preparation stage: selection of input materials to improve starter effect, macro- and micro nutrient rate, maturity of organic matter, energy consumption efficiency for drying and formulation,
- Formulation of pellets, granules: shape and geometry of pellets are optimised according to crops and plantations demands.

In the current legislations of fertilisers are applicable in the European Union do not include limitations and standards for durability regarding organic and organo-mineral fertilizers that are available in a pelleted or granulated form.

However, biomass based pelleted fuels have a clear standard for durability index.

### Innovative elements

- Production of pelleted organic and organo-mineral fertilizers with new coating materials and their optimisation for precision farming to become easily adaptable and implementable in the same pass as

sowing.

- All coating components are fully approved for organic farming.
- The innovation provides economic benefits: improvement of durability, added value realisation through organic coating components are applied to improve plant nutrition and conditioning.
- Organic coating components can immobilise compounds are responsible for seed germination inhibition.
- Organic coating components applied are considered as effective solution to avoid odour problems.

The invention easily adaptable for all granulated and pelleted organic, organo-mineral products are available on the market with approved certification.

### Field of application

The invention provides opportunity for new products and fertilizers to improve their quality and efficiency with sustainability aspects:

- ✓ arable crop farming,
- ✓ horticultural crop production,
- ✓ in aquaculture pond manuring,
- ✓ mushroom cultivation,
- ✓ on site soil remediation.



Based on this invention coated organic and organo-mineral fertilizers have a potential use in the same pass as sowing in order to improve sustainability and achieve the economic dose.



Keywords : biomass utilization, precision farming, organic fertilizers, pelletization, granulation, durability index, sustainable agriculture.

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