

## TRAINING MATERIAL

### Title:

Microalgae based biofertilisers from wastewater by heterotrophic microalgae process (ID:255)

### Training:

#### What is the product?

Microalgae powder biofertiliser with NPK content obtained from the treatment of effluents with high organic and nutrient load (effluents from fruit and vegetables processing industry).

#### Who is the vendor of the product?

Fundación CARTIF.

CARTIF is a horizontal, private and non-profit technology center. Its mission is to offer innovative solutions to companies to improve their processes, systems and products, improving their competitiveness and creating new business opportunities.

CARTIF develops R&D projects, directly funded by companies or public funds raised through competitive calls for national and international level. CARTIF also advises public authorities (municipalities and regional governments) in the planning and development of innovative projects with high economic returns.

#### Which other products are provided by the vendor?

Pelletized digestate from mixture of pig manure, poultry manure and straw by "MIX-FERTILIZER" process.

Struvite from digestate and Manure by "REVAWASTE" process.

Digestate from the co-digestion of vegetable oils waste and pig manure by "VALUVOIL" process.

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

The utilization of microalgae allows recovering nutrients carried by the wastewater, while minimising the emissions of greenhouse gases and saving energy. Microalgae is an organic fertiliser which have the potential to prevent nutrient losses through a gradual release of N, P and K (Figure 1).

#### Which is the nutrient content of the product?

The nutrient content will depend on the type of wastewater treated.

Biofertiliser (bio based): 6 %N, 2.5 %P<sub>2</sub>O<sub>5</sub>, 1.5 %K<sub>2</sub>O.

Microalgae contain some plant growth-promoting substances such as auxins, cytokinins, betaines, amino acids, vitamins and polyamines.

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

The methods of application of the product are those generally used for biofertilisers.

### **How to use the product?**

Biofertiliser packets need to be stored in cool and dry place away from direct sunlight and heat.

The application of microalgal biomass (Figure 1) into the soil, improved the fresh and dry weight of seedlings as well as their pigment content. Normally for a good treatment, it is possible to use 2 and 3 kg of dry microalgae per t of soil.

It can be used in organic, low input and conventional farmings with a frequency 3-4 consecutive seasons in the same field and the carrier combination is usually compost.

### **Which are the authority permits and in which EU countries?**

According to the European regulation EU Fertilising Products Regulation (FPR) (EU) 2019/1009, an organic fertiliser shall contain organic carbon (C org) and nutrients of solely biological origin.

The contaminants and Pathogens in an organic fertiliser must not exceed the limit values. As the wastewater is pathogen-free and the concentrations of metals are very low, the microalgae biofertiliser obtained from this wastewater complies with the limit values.

### **How much does it cost?**

The cost of manufacturing the product depend on the amount of wastewater to be treated.

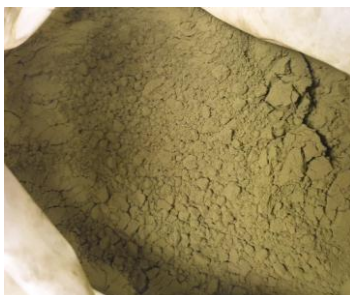


Figure 1. Microalgae based biofertiliser powder

For more information: [https://nutriman.net/farmer-platform/product/id\\_255](https://nutriman.net/farmer-platform/product/id_255)