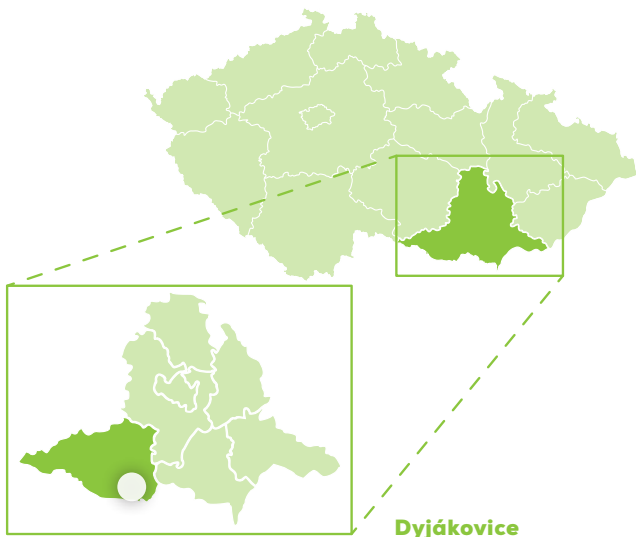


# Challenge

# Participating partners



## DESCRIPTION

Hot continental climate; 60% of the soils are used as agricultural land, 83% of which is arable. The soils are fertile, in need of frequent irrigation to produce agricultural products. There is a significant presence of cropland and livestock farming.

## CHARACTERISTICS

The large presence of the food and drink industries and associated waste products, such as those from the dairy industry, offers opportunities to recover nutrients and convert them into carbon-rich products to add back to the soil.

## CHALLENGES

The challenge is to considerably reduce high nutrient losses from food production and food waste and increase recycling to farms.

## SELECTED PRACTICES

- Application of carbon-rich compounds to winter wheat fields to increase soil organic carbon
- Recovery of carbon-rich compounds for re-use on farms through the application of electrospun nanofibrous membranes for whey separation

## Case study leader :



## Partners :



## Contact

### Programme coordinator :

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*Circular solutions for carbon and nutrient management*

## Case study South Moravia, Czechia



# Case study

## South Moravia, Czechia

### What ?

Proper carbon and nutrient management

### How ?

Long-term experiments on genotypic differences in nitrogen supply and on food waste valorisation in agriculture



### Genotypic differences in mechanisms contributing to nitrogen efficiency of plants (Dyjákovice)

The potential of contrasting genotypes of winter wheat to improve nitrogen use efficiency are tested. A randomised three-year field experiment in the region is used to determine yield of straw and grains, and the nitrogen content, as affected by different rates of nitrogen supply.

Seeding



Harvesting

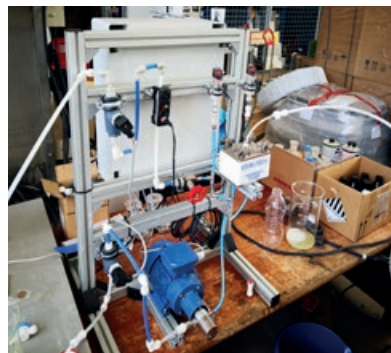


### Organic carbon recovery from the dairy industry to produce carbon-rich soil fertiliser and animal fodder additive (Dyjákovice)

An analysis of the dairy industry allows for the identification of potential streams for the recovery of carbon-based nutritional/soil amendments and elaborates integration strategies for implementation into food industry waste (acid whey processing). Separated acid whey is applied to the soil to improve soil carbon storage management. It can also be processed for fodder additive applications.



Whey application on field



Laboratory experiments with whey

### Whey pre-treatment and following thickening by means of Electrospun Nanofibrous Membrane module and nanofiltration technology at the pilot-scale level (Brno)

Electrospun Nanofibrous Membranes (ENM) can be used as a pre-treatment to a nanofiltration process for fats and casein removal. The average pore size of ENMs is of microfiltration, thus the technology could be considered equivalent to centrifugation, which is currently widely used as a pre-treatment unit in the acid whey-processing industry.

The ENMs and nanofiltration unit were properly tested at the pilot-scale level.

