

APP4FARM

APP4FARM Artificial intelligence aPPLICATION for FARMing

Developing a Decision Support System to allow farmers to monitor nitrogen loss, for efficient management of nitrogen-based fertilisers.

AIMS

To develop agri-food systems enabled by interconnected digital technologies, that are more transparent to consumers, farmers and other stakeholders along the agri-food value chain.

Specifically, APP4FARM will create:

- A **Decision Support System** with a dashboard giving the farmer up-to-date information on nitrogen emission levels
- A tailored **Sensing System** to monitor environment and soil health, including nitrogen-related microbial activity
- **Machine Learning/Artificial Intelligence** forecasting models



Background

Nitrogen is the primary nutrient, critical for the productivity of agricultural ecosystems. Hence, large changes in the availability of nitrogen can lead to severe alterations of the nitrogen cycle in terrestrial ecosystems. Currently, NUE estimates the N surplus as the difference between input and output.

To understand the losses, the emission related to single farming systems and climatic zones need to be accurately measured and integrated in a Decision Support System (DSS) in order to design better N management strategies aiming at achieving agronomic objectives (farm income, high crop and animal productivity) and environmental objectives (minimal N losses), simultaneously.



Partners



UNIVERSITÀ
DEGLI STUDI
DI BRESCIA



Ollscoil Teicneolaíochta na Mumhan
Munster Technological University



UNIVERSITÀ
DEGLI STUDI
FIRENZE



GFZ

Helmholtz-Zentrum
POTSDAM



Impact

APP4FARM will contribute towards the following societal impacts:

- Publicly available monitoring data, ensuring transparency of the supply chain from the very beginning
- The data will provide the basis for a "green labelling" project, leading to more traceable, sustainable and healthy food
- Limitation of greenhouse gases (N₂O) and nitrogen oxides (NO_x) emissions
- Data transparency



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no 862665.

