

## Activities

- Strategies to reduce phosphorus content in soils where manure is applied.
- Test and set-up of quick methods to estimate chemical fertility of soils in extensive crops.
- Digitalization and integration of database from agricultural plots and its fertilization management.
- Evaluation of biogas production from slurry storage in flexible ponds.
- Evaluation of ammonia and GHG emissions from slurry storage
- Evaluation of emissions inside pig and poultry farms and strategies to minimize them.
- Calculation of final compost quality from different sources and losses by ammonia emissions.

## Further details



**Total budget:** € 178.959,58

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€ 73.137,06 (DARF)

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## FERTICOOP

# Evaluation of biogas produced in manure storage systems



## Objectives

- Reduce GHG and ammonia emissions through fertilizing optimization and adoption of manure management methodologies.
- Study of BATs to apply in farms and crops over the standards.
- Achieve an accurate manure management and sustainability fertilization.
- Afford cooperative technicians with tools and necessary knowledge to make good decisions based on sustainability criteria.
- Valorize manure through knowledge of its nutrient content.
- Adapt technologic and digital available tools to farmers needs.
- Offer specific advice and manure management to technicians and farmers.

*Biogas production*



## Results

- To reduce phosphorus:
  - Alternate winter cereal with winter fodder.
  - Extract the straw at harvest and spurge material.
- To estimate chemical fertility of soils it is better to send samples to specialized labs. However, if it's done in situ, it is recommended to always perform the same standard protocol.
- Digital database and tools allow manage information of crops, application and fertilization, and make a forecast of campaigns.
- Produced biogas showed high content of methane, but also high concentration of hydrogen sulphide that must be removed for the correct boiler operation.
- Emissions from digested slurry storage in uncovered ponds are higher than the non-treated slurry. When the ponds are covered, the reduction of the emissions is around 50%.
- Compost samples show good organic NPK content and didn't had any pathogen content, what means that they are well sanitized.

## Context

The new legislation "Real Decret 153/2019" about fertilization and manure management establish new obligations on manure management, what implies a huge change on actual manure management methodologies. On the other hand, the Best Available Techniques (BAT) are protocols and rules that will condition fertilization and manure management.

Location in the  
Nutri-Know value chain

Evaluation of  
biogas produced  
in manure storage  
systems



These BATs are proceedings planned to apply on farm to reduce emissions. However, government has planned a flexible system of actuations to perform whenever these has as aim objective and can prove an emissions reduction. These BATs cover all steps and processes from livestock farming to manure application in lands and aim to optimize organic fertilizer, with a consequent ammonia emissions reduction.

Cooperatives are key stakeholders for the manure management following the government strategies of decentralization of manure: cooperatives can store manure from its farmer partners and treat it in small scale.

This project will represent different scenarios from different cooperatives: climate conditions, crops, kind and amount of slurry, distance from livestock farm to fertilized lands, kind of slurry transport and presence of manure treatment at livestock farm.



# NUTRI•KNOW

Learn more about the project at [www.nutri-know.eu](http://www.nutri-know.eu)



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