

MALTA

Renewable sources & waste management

Location
Attard

Programming period
2014 – 2020

Priority
P5 - Resource efficiency & climate

Measure
M16 – Cooperation

Funding
Total budget 2 993 200 (EUR)
EAFRD 2 244 900 (EUR)
National/Regional 748 300 (EUR)

Project duration
2021 to 2023

Project promoter
Farmers Central Cooperative Society Ltd. (FCCS)

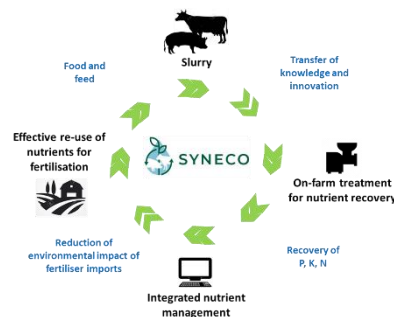
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CAP support funded a research project concerning the recycling of manure nutrients as fertiliser in Malta.

Summary

The entire area of Malta is designated as a Nitrate Vulnerable Zone due to its high concentration of livestock and general population density. The majority of dairy and pig farms in Malta operate on small pieces of land and there are numerous challenges associated with the bulk storage, handling, and third-party export of this liquid waste. The Farmers Central Cooperative Society Ltd (FCCS) decided to embark on a research project that would explore the potential for recycling manure nutrients locally as fertiliser.



Project Results

The facility can process up to 60 000m³/year of pig and cow slurry. It can recover irrigation water (50 % of slurry), organic matter (10 %) of a size equal to or greater than 100 micrometres to enhance soils, and liquid biomass (40 %) which is high in nutrients, and which is an ideal substitute for imported fertilisers.

The project developed an integrated nutrient management software tool which is ready for use.

The project demonstrated that anaerobic digestion helps to contain the size of the mobile plant, and that using regional biogas plants to treat slurry helps farmers to diversify their income.

Upon completion of the project, it will be possible to attain full circularity in the treatment of manure and enhance resource efficiency through the use of bio-fertiliser.

Lessons & Recommendations

- ❑ The project showed that farmers can work together to find circular solutions, and that greater cooperation in farming can directly benefit the environment.
- ❑ Diversified revenues can be an incentive for farmers. Carbon credits and renewables may be harvested by farmers in their businesses similar to the way they harvest crops.

Context

Malta has the highest population density of any European Member State, and the entire territory is designated as a Nitrate Vulnerable Zone. With a similarly high livestock density, the pressures on agricultural land are very significant. The majority of dairy and pig farms operate on small pieces of land, which makes it necessary to export livestock manure to third parties. In the meantime, slurry is usually stored temporarily in cesspits on-site, and this creates numerous challenges associated with bulk storage and handling of liquid waste.

In this context, the Farmers Central Cooperative Society Ltd (FCCS) – the largest fruit and vegetable farmers' cooperative in the country – decided to embark on a research project that would explore the potential for recycling manure nutrients locally for fertiliser.

Objectives

The SYNECO research project aims to develop a pilot processing plant that can be transferred by a truck. The mobile plant can provide pig and cow farms with a manure treatment service, which will make the recovered nutrients available as a local source of agricultural fertiliser – thus creating a circular, sustainable solution.

Activities

Action 1: Set up a mobile pilot plant to treat up to 60 000m³ of pig and cow slurry annually:

- Assess the available technology and identify potential solutions for Malta.
- Make the pilot plant available in the north areas of the island for processing animal manure in an economically viable manner. The amount of slurry treated must be balanced with the amount of nutrients required.

Action 2: Make the recovered nutrients available for use within the local agricultural sector and study their effects on crop production:

- Assess the importance of crop and fertiliser planning.
- Carry out field trials using recovered bio-fertiliser.
- Conduct crop trials in plant pots under controlled conditions, such as greenhouses.

Action 3: Assess the effect of the treatments on soil health

and the environment, including:

- Soil health and plant nutrient mobility and availability.
- Possible increase in soil organic matter content.
- Loading of soil with heavy metals and their mobility.
- Contamination potential of these soil amendments on water bodies and air quality.
- Explore the possibility of generating electricity from slurry.
- Investigate the implications of extending the project nationwide.
- Envisage the potential design requirements of a permanent facility.
- Carry out a feasibility study and economic impact assessment, including a costs and revenues estimation.

Action 4: Dissemination:

- Publish articles in peer-reviewed journals and the wider media.
- Organise farms visits to raise awareness about slurry treatment technology amongst potential users, authorities, Farm Advisory Services (FAS), etc.
- Organise site visits for farmers to experience the application of bio-fertiliser and to assess the performance of the crops using these nutrients.
- Make presentations to farmers and their cooperatives, FAS, authorities, NGOs as well as consumer associations.
- Launch a website and social media presence to circulate regular project updates.
- Conduct interviews with opinion leaders to initiate a healthy debate on the project.
- Organise open days to raise awareness about the importance of circular solutions in agriculture.
- Work closely with the University of Malta and the Malta College for Arts, Science and Technology to promote the project and its results.
- Promote the project amongst farmers who already use advanced farming techniques like hydroponics, as key stakeholders who may be interested in exploring this technology.

Main Results

The facility can process up to 60 000m³/year of pig and cow slurry. From the processed slurry, it can recover irrigation water (50 % of slurry), organic matter (10 %) of a size equal to or greater than 100 micrometres to be applied to and improve soils, and liquid biomass (40 %), which is high in nutrients and is an ideal substitute for imported fertilisers.

The project developed an integrated nutrient management software tool which is ready for use.

The project demonstrated that anaerobic digestion helps to contain the size of the mobile plant, and that using regional biogas plants to treat slurry helps farmers to diversify their income.

Upon completion of the project, it will be possible to attain full circularity in the treatment of manure and enhance resource efficiency through the use of bio-fertiliser.

Key lessons

The project showed that farmers can work together to find circular solutions and that greater cooperation in farming can directly benefit the environment.

This said, it is important to find ways and means to create win-win solutions for the farmers and the environment. The best way to bring farmers on board with circular economy solutions is by working for and with them, not against them.

Diversified revenues can be an incentive for farmers. Carbon credits and renewables may be harvested by farmers in their businesses similar to the way they harvest crops.

“Within the realm of a circular economy, the farmer must become a protagonist and not an antagonist. The farmer is closer to earth and earth is what needs to be understood to close the loop and emulate nature in behaviour of mankind. SYNECO put this paradigm into action.”

SYNECO

Additional sources of information

n/a