NATIONAL RURAL NETWORK MALTA

GOVERNMENT OF MALTA
PARLIAMENTARY SECRETARIAT FOR EUROPEAN FUNDS

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SYNECO

Recovering value from pig and cow slurry to promote environmental synergies

The Farmers Central Cooperative Society Ltd (FCCS) has recently been awarded a grant of just under €3M to implement a project submitted under Measure 16.2: Support for pilot projects, and for the development of new products, practices, processes and technologies, of the Rural Development Programme for Malta (2014–2020), European Agricultural Fund for Rural Development. This project is co-financed from the European Agricultural Fund for Rural Development at a rate of 75% European Union and 25% Government of Malta. The project aims to recover value from pig and cow slurry to promote environmental synergies. The project's acronym is SYNECO.

SYNECO aims to enhance circular economy in Malta and reduce environmental impacts and climate change emissions from the disposal of pig and cow slurry. The project specifically deals with the treatment of cow and pig manure and recovers this resource into biofertilizer for use in agriculture in accordance with best agricultural practice – including crop and fertilizer plans. The project is a 20-month project and will be carried out in close collaboration with the cow (Koperattiva Produtturi tal-Halib) and pig (Koperattiva ta' min Irabbi l-Majjal) cooperatives. SYNECO will alleviate the challenges that these cow and pig breeders face today when it comes to the management of the slurry that their farms generate.

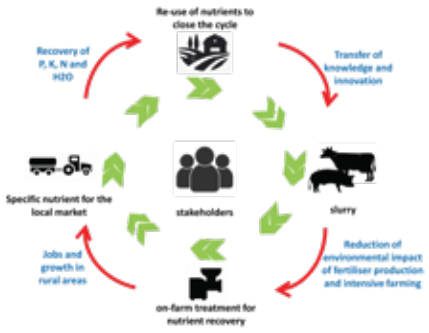


Figure 1. SYNECO. A circular economy approach.

This pilot project is a follow-up from a 'proof of concept' project funded by GAB (Governance of Agricultural Bio-resources) and carried out in 2018 when pig and cow slurry was treated successfully to recover water, fibres and organic concentrate. SYNECO enhances the feasibility of the proposed solution and will test the recovered products in the laboratory and on the field to assess soil and plant performance as well as to monitor whether these recovered products will have an adverse effect on the environment.

Figure 2. Proof of concept installation on a local pig farm.

Rural Development Programme for Malta 2014-2020

Part financed by the European Union
Co-financing Rate:
75% European Union; 25% Government of Malta

The European Agricultural Fund for Rural Development: Europe investing in rural areas

The technology to be used by SYNECO is based on reverse osmosis (RO) and will include a separator to remove the course material from the raw slurry as well as a fine filter to remove solids that are larger than 30 microns (0.03mm). The resulting liquid is passed through an RO to recover circa 50% clear water (permeate). Whilst a use for the recovered solids and the clear water is easily found, the resulting concentrate (retentate), although drastically reduced in volume, has a high concentration of nutrients. It is these phosphorus (P), potassium (K) and nitrogen (N) nutrients that make this pilot project enticing because these nutrients can easily replace the imported chemical fertilizers used in local agriculture.

The pilot project is groundbreaking because the treatment (or part of) can be done on farm significantly reducing costs and emissions from the transport of raw slurry. Furthermore, SYNECO will research the direct and indirect consequences of applying these bio-nutrients during the different seasonal harvests through lab work and field trials. The trials will be conducted on luvisols (ħamri), calcisols (bajjad) and regosols/vertisols (taffli) soils and on a choice of seasonal crops. Finally, SYNECO will bring farmers together to plan for the treatment of raw slurry as well as for the application of biofertilizer based on the knowledge that this collaborative action generates.

For logistical reasons, the project will focus on the central and northern parts of Malta but farmers in the south, wishing to participate, will be actively roped in too. The funding secured will be used for the treatment process of the slurry itself, the cooperation between farmers to enhance their knowledge base on the benefits of biofertilizer as well as for promotion and dissemination.

This project is in line with the objectives of the FCCS as it aims to enhance the quality of the agricultural produce that its members cultivate as well as to enhance the technical skills of the farmers in the application and management of fertilizer.

Figure 3. Detail of vibrating RO for the single pass treatment of raw slurry

Figure 4. Raw slurry before (dark) and after (clear) a single pass through the vibrating RO pass

Figure 5. Measuring the conductivity of the permeate (clear water)

AgriConnect FAS

OVERVIEW

Over the past few years, a substantial number of Maltese farmers have experienced significant difficulties in attaining and maintaining compliance with the often complex requirements of the Common Agricultural Policy (CAP). AgriConnect has achieved registration to function as Farm Advisory Service, with the aim of ensuring that proper compliance is attained by farmers. Services rendered through AgriConnect are free of charge to all farming sectors. These services help farmers and livestock breeders tackle any obstacles and technical problems that they encounter in their operations. This is done by providing them with the opportunity of seeking specific personalised information and consultative advice aimed at promoting diversification within their operations, producing higher quality products and encouraging sectoral innovation. AgriConnect is strategically located within proximity to the relevant authorities whereby it intends to achieve an excellent collaborative approach between farmers and all relevant authorities pertinent to the rural sector, bridging farmers and stakeholders.

SOME OF THE SERVICES OFFERED BY AGRICONNECT

CROSS COMPLIANCE

Farmers and livestock breeders that are eligible for subsidies Under Pillar I and Pillar II of the CAP issued by the Agriculture and Rural Payments Agency are obliged to conform with 'Cross Compliance' requirements aimed at safeguarding the environment, public and plant health and animal welfare. AgriConnect helps farmers identify any problems they might face and offer them appropriate advice on how to comply with current regulations, ensuring that any loss of funds attributed to non-compliance pertinent.

SOIL TESTS, CROP PLANS, FERTILISER PLANS AND NUTRIENT MANAGEMENT PLANS

Obligatory administrative work required by the farmer such as Crop Plans, Soil Tests, Fertilizer Plans and Nutrient Management Plans are also formulated by AgriConnect in line with legislative requirements free of charge. Such tools allow the farmer to better understand the characteristics of his holdings, allowing him to plan accordingly. Additionally, these tools serve to safeguard soil quality and regulate nitrate levels in agricultural production as to protect water quality for future generations.

AGRI-ENVIRONMENT CLIMATE MEASURES

AECMS are voluntary measures taken up by the farmer who is compensated by costs incurred and income forgone in implementing such measures. These measures are generally simple to implement but need proper adherence in terms of compliance. AgriConnect will assist farmers in informing them on the availability of such measures compatible with their holding and agronomic practices.

RURAL DEVELOPMENT MEASURES

AgriConnect will in this advisory area relate to measures at farm level, which are provided for in rural development programmes and are linked to farm modernisation, competitiveness building, sectoral integration, innovation and market orientation, as well as for the promotion of entrepreneurship. This service will correspondingly help farmers satisfy the requirements for the ongoing RDP and any subsequent legislation.

ADVISORY SERVICE ON SOIL MANAGEMENT PLAN (SMP)

AgriConnect caters for the provision of Soil Management Plans, addressing issues related to soil erosion, compaction and low levels of organic matter.

ACT MALTA

ACT is an NGO that started out in 2018 which believes in sustainable progress across all areas of society and that this achievable through open, constructive dialogue and collaboration.

This article is about a workshop called "Itmanna" which was carried out in the beginning of June to show participants how to grow their own fruits and vegetables as well as learning about local tress and shrubs.

ITMANNA Workshop

Human life is centered around food, spending time in nature, and connecting with the changing seasons and the community. For many this is no longer the norm, our behavioural trends became distanced from the source of our basic needs. By growing and harvesting our own food, we can restore and reconnect with nature, our source, while benefiting from multiple health and environmental benefits and reducing costs.

ACT wants to bring people closer to nature and empower communities to learn by doing. Through Itmanna, a project supported by the A4U scheme of Aġenzija Żgħażagħ, volunteers had the opportunity to experience first-hand growing food, with different limitations.

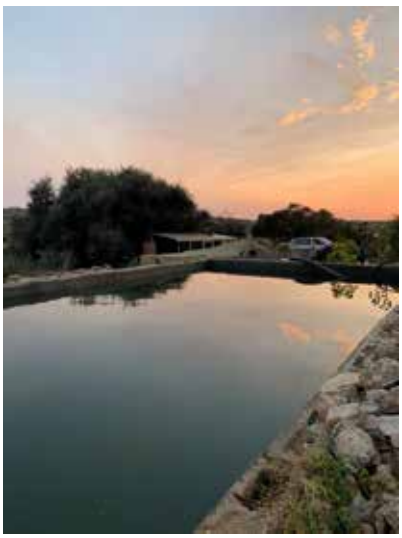
Volunteers grew different vegetables, herbs and spices in different pots and planters, filled with soil compositions, sprouted microgreens and grew mushrooms from cardboard, hay and sawdust.

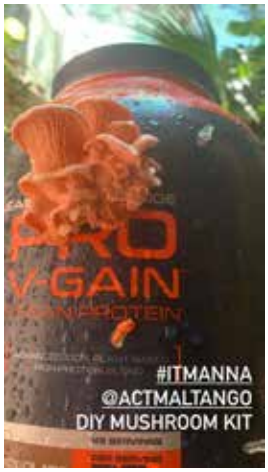
We, participants in the workshop, researched online, reached out to local farmers and people who experienced growing their own vegetables. A crucial first step was the setting up of irrigation systems that watered more efficiently through drip pipes. We cleaned out an open reservoir, fixed leaks, and used a solar panel to power a pump.

No artificial pesticides were used, volunteers produced our own pest control with natural repellents. This way we did not get rid of necessary insects and kept everything as healthy as possible. We also protected, wherever possible, the annual and perennial flora that emerged in our fields, balancing the need to de-weed with the needs of pollinators and other wildlife in the area. Flowering species were particularly cared for.

Companionship plantation was one of our main experiments. We could see some plants thriving with each other like tomatoes and basil, or corn with pumpkin and beans, the three sisters garden. Others don't do well when planted close to each other like potatoes, tomatoes and corn.

Two fields were created out of otherwise unused ground, and a slow process of building up, improving and protecting soil was initiated. These fields were integrated in a semi-wooded, coastal setting, with the accompanying challenges of excessive salinity, competition with tree roots and lack of adequate





access to sunlight. However, with careful selection of crops according to their sunlight preferences, with the addition of horse manure as well as humus from underneath carob trees, and further mulching, we managed to produce a small variety of crops. Soil testing in all sites allowed us to identify our soil needs better.

Within this project we also experienced the process of microgreens, which we took home to take care of and got the yield in 10 days which was very satisfying. This was a very easy process and microgreens are very nutritious. All we needed was two trays, one to sow seeds and one to cover for the first 4 days and spray them each day with water not in direct sunlight. From the 4th day onwards we uncovered these seedlings, used the same tray at the bottom and watered them in the tray. From our fields, we collected a good amount of seeds from four species: mustard, coriander, rucola and chard. An initial experiment in growing mustard microgreens from our own seeds was successful.
Mushrooms were also a part of itmanna and we got to learn a lot about them. It never crossed our minds how sanitized you need to be during the process as we tried to get them growing from spores. We did not have great success, but we learned a lot and saw that from the three substrates we tested: cardboard, wood and straw, the cardboard, the easiest to find and to recycle, was in fact the best result.

At last, with all the precautions, we invited the public to come for a half day workshop at our field for an open discussion and a tour of what we are doing. During the workshop we had a guest from MOAM (Joe) who spoke a lot about the importance of organic farming and many of its practices where we all learned a lot. We finally closed the day with a simple exercise of repotting some chillies that the participants took home to grow.