Construction of an innovative dairy composting barn in Italy

CAP funds support the construction of an innovative compost barn with fully automated feeding and milking processes.

EAFRD-funded projects

Location: Ladispoli, Roma, Italy

Programming period: 2014-2020

Priority: P2 - Competitiveness

Focus Area: Farm performance, restructuring & modernisation

Measures: M04 - Investments in physical assets

Funding:

Total budget:	1 833 640 (EUR)
EAFRD:	474 399 (EUR)
National/Regional:	625 785 (EUR)
Other:	733 456 (EUR)

Timeframe: 05/03/2019 - 14/05/2021

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Summary

Agricola Pizzo del Prete is a farm specialised in organic dairy cow farming. CAP funds enabled the farm to remain viable by helping it to invest in organic production, animal welfare and innovative production systems. In 2019, the farm received investment support to set up the first Italian compost barn, with fully automated feeding and milking processes that are managed remotely, thus minimising human intervention. As well as improving animal welfare, the farm also invested in a photovoltaic system for energy production.

Project results

- The productivity of the animals has increased due to the improved welfare conditions.
- The cost of litter management has decreased, along with the costs of medical/veterinary services and food waste.
- The production of GHG emissions has zeroed, as wastewater is contained in an airtight tank without emissions into the atmosphere.

Key lessons and recommendations

- Overall, CAP support can facilitate the adoption of technological innovation, which is essential for the viability and resilience of the dairy livestock sector.
- The beneficiary considers that cattle breeding farms should adopt precision zootechnics and higher standards of animal welfare.

Context

Agricola Pizzo del Prete specialises in organic dairy cow farming. In 2017, the company was at a crossroads between innovating in line with higher animal welfare principles, or shutting down, like many other farms in the area were doing. The inspiration and motivation for change came during a conversation with a food consultant, who proposed an innovative technology that was already in use outside Europe and which had been designed with animal welfare in mind. This innovative type of barn allows the animals to behave as if they are outdoors, while minimising the risk of foot and udder infections.

The Petruzzi brothers, the farm owners, started researching the subject themselves, and travelled to Germany and Holland in order to acquire the necessary skills to introduce this novel barn to Italy. Up until this project, there had been only a few attempts in Italy to repurpose old stables into compost barns, with mixed results. The Pizzo del Prete stable, on the other hand, was exclusively designed as a compost barn, and is the first Italian example that combines both compost barn and stable automation.

Objectives

The aims of this project were to establish an innovative type of barn that would improve animal welfare and reduce greenhouse gas emissions by achieving improved energy efficiency.

Activities

Project activities included:

- In 2017, the farm adopted organic farming and animal welfare commitments under the Rural Development Programme (RDP) measures M11 and M14.
- In 2019, the farm received RDP support for the construction of a compost barn combined with stable automation, along with a photovoltaic system for energy self-production. A large part of the contribution was used for the automation of the two most important production processes in a dairy farm, namely:
  - feeding - operated by an automatic mixer-wagon which provides the daily ration to meet the food, energy and production needs of the animals.
  - milking - through three fully automatic robots (DairyRobot R9500 by @geafarming for organic milk production), that allow the animals to live in absolute freedom and to freely enter into the robot to be milked whenever they feel the need over the day, without human intervention.
- The compost stable is a new concept of herd management, as it includes a vibro-cultivator which mixes the substrate on a daily basis up to a depth of 10-15 cm. This allows the aeration of the substrate, which is normally compacted because of the weight of the cattle. The mixing of the faeces with the substrate itself, which is loam deriving from pruning clippings, triggers an aerobic fermentative process. This aerobic fermentation prevents the development of harmful bacterial flora, and reduces the concentration of insects (flies). In this way, the udder and the feet of animals remain healthy.

Main results

- Through domotics - meaning a synchronized network system with controllable devices that work together and can be managed remotely via a smartphone, tablet, etc., - animal welfare is monitored continuously. The milking and feeding robots are monitored through a smartphone application based on a chip responder inserted in the collar of each animal. Staff members only intervene to avoid mastitis in rare cases where cows have not entered the milking robots frequently enough. In this way, the production of organic milk has increased both quantitatively and qualitatively.
- The farm voluntarily joined ClassyFarm: a platform financed by the Italian Ministry of Health which processes voluntarily-provided data from food businesses that raise food-producing animals. ClassyFarm is also an opportunity for registered farmers to receive an overview of their status, for example, farmers receive a notification when their level of administered antibiotics exceeds the threshold allowed by the legislation.
- The productivity of the animals has increased due to the reduced stress conditions enabled within this animal-friendly environment, e.g. double the living space per animal compared with typical living conditions.
- The bacterial load has lowered, while other common animal health problems, that are present in traditional stables, are absent.
- The costs of litter management have decreased, along with the costs of medical/veterinary services and reduced food waste.
- The production of GHG emissions has zeroed, as wastewater is now contained in an airtight tank without emissions into the atmosphere.

Key lessons and recommendations

- Overall, CAP support can facilitate the adoption of technological innovation which is essential for the viability and resilience of the dairy livestock sector.
- The beneficiary considers that cattle breeding farms should adopt precision zootechnics and higher standards of animal welfare.
- The most interesting aspect of implementing this project was the task of documenting and deepening the compost barn breathing system so as to create Mediterranean-type climatic conditions. The close proximity to the sea allows for natural ventilation which favours a constantly drier litter.

Quote

"Animal welfare is farmers' welfare. This is the priority in our company. Our compost barn, which was the first to be made in Italy, allowed us to achieve this goal. We are fully satisfied with the results obtained and production has also increased."

Pietro and Paolo Petruzzi

Additional information:

Web article dedicated to the innovative barn

www.youtube.com/watch?v=LYjJ2zdnCdo

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