

Coffee's pulp waste becomes organic compost

The pulp of coffee beans is considered a waste product on coffee plantations, which is usually thrown away or dumped into rivers - with significant negative consequences for climate change and the environment. Macarena San Martín-Ruiz from the University of Stuttgart is working with Coopetarrazú, the largest coffee cooperative in Costa Rica, to find out how the mixture of pulp and husks can be turned into organic compost and thus protect the climate.

Coopetarrazú, is a cooperative dedicated to the production and marketing of coffee on Costa Rican land, committed to a regenerative agriculture, environmental protection and sustainable production.

For 5 years, this company has been researching and working on the use of coffee pulp, that was previously considered a waste. One of the projects that arises is composting, which consists in converting the pulp into organic compost.

Since the beginning of the project, improvements have been made in order to optimize the nutrients contained in this compost so that it's better used by the plants, once the fertilizer is incorporated into the coffee plantations.

3 years ago, a consultancy was carried out with the German Cooperation Agency and a research project was started in conjunction with the University of Stuttgart, the main purpose has been to perfect the methodology for the treatment of coffee by-products.

"We have been working on this for three years, the project was born from a study where it had been determined that Coopetarrazú's greenhouse gas emissions were concentrated in the coffee pulp.

Therefore, the Cooperative made the decision to invest in a research focused on improving the composting process to reduce greenhouse gas emissions and deliver an organic fertilizer to the associates for the improvement of their crops", said Jimmy Porras, Manager of Research, Development and Innovation in Coopetarrazú.

The project was carried out with the support of Macarena San Martín-Ruiz, Researcher at the University of Stuttgart, who ensures that the main results of the new methodology for the preparation of organic fertilizer is the reduction of Greenhouse Gas emissions by up to 75%, which means, one of the treatments with emission factors of 129 g CH₄ / kg of pulp has been passed to 20 g CH₄ / kg of pulp. It has also been possible to improve the efficiency of thermophilic processes during the composting process by 38%.

Sustainable Management of coffee by-products

"From Germany, tests have been performed in specialized and certified laboratories to evaluate and endorse the results of the quality of the compost, after applying the optimized management of composting," said Macarena San Martín-Ruiz.

Sandra Spies, director of NAMA Café assures that the Cooperative has played a key role in the sector, it can be considered as a model for other coffee mills in Costa Rica and Central America.

Currently the organic fertilizer is delivered to about 5000 coffee producers associated to Coopetarrazú so that in addition to improving their crops, they will work hand in hand with the conservation of the environment.

Background

The Cooperative is a pioneer in the development of this project, not only in Costa Rica but also Central America, the concern to improve the relationship with the environment and be part of a circular economy led the Cooperative to seek tangible alternatives to mitigate the environmental impact caused by coffee pulp.

This project is aligned with the National Decarbonization Plan of Costa Rica, the National Bioeconomy strategy and the National Composting Plan and has been developed thanks to the support of the University of Stuttgart and the German Development Cooperation (GIZ) through NAMA Café.

Press release

27-May-2021

Source: University of Stuttgart

Further information

University of Stuttgart

Institute for Sanitary Engineering, Water Quality and Solid Waste Management (ISWA)

Chair of Waste Management and Emissions (EMS)

Macarena San Martín-Ruiz

Phone: +49 (0)711 685 65396

E-mail: macarena.sanmartin(at)iswa.uni-stuttgart.de

- ▶ [University of Stuttgart](#)
- ▶ [Video of the project](#)