

TORRE DELLE CARCIOLE FARM

Presenter

Torre delle Carciole Farm

Description

The farming sector is particularly vulnerable to climate change that has caused extensive damage to agriculture. In Italy, damages caused by the climate change in the last decade amount to 14 billion euros (around 15.4 billion US \$) and are due to the alternation of extreme events, from prolonged periods of drought to violent waves of bad weather that have devastated crops, structures and infrastructures. Italy holds the European leadership in terms of number of companies operating in the organic sector, and even this primacy is being put at risk by climate change that affects the typical Made in Italy products and the crops, particularly due to the arrival of alien species that are killing fruit and vegetables.

Torre delle Carciole farm started the cultivation of *Phyllostachis Pubescens Edulis* bamboo in 2014, in order to have a short rotation timber production for the sale of fine wood to the processing industry. The waste and unsold part is valued as a raw material for the production of electrical and thermal energy with a positive environmental impact. The bamboo in its final uses has a neutral or positive CO2 impact.



Results

CO2 positive energy from Bamboo is a project based on the speed of growth of bamboo and its thermodynamic characteristics. It is ecological and protects the environment. No treatments nor fertilizers are needed, bamboo derivatives have a positive CO2 footprint, absorb 35% more of H2O, avoid soil erosion, desertification and purify water. The goal is to have an autonomous cycle from planting to processing and use of the finished product with guaranteed basic profitability. From a general perspective, farmers from all over the world will have to feed an increasing population in forthcoming years, putting in place sustainable production models that are suitable for achieving global adaptation to meet the climate change challenge. Research and innovation can play a key role in helping farmers to improve their sustainability models, so there is a need for incentives and reward mechanisms in this sense. With particular regard to CO2 positive energy from Bamboo project, the main challenges to implement were:

- Minimizing water resources consumption by using innovation. More in detail, to reduce the water footprint it was necessary to invest in innovation with an ad hoc piping system for irrigation and fertigation (drip irrigation systems);
- Investing in chippers with adequate output to obtain a size suitable for Syngas plants;
- Learning to know at an engineering level the operation and maintenance of the syngas to guarantee their operation at least 7,000 hours per year.

Climate smartness

A key element of this project is that since its inception is designed to diversify production within the farm, use by-products for the generation of energy and reduction of greenhouse gas emissions, and implement several practices that allow the bamboo production process highly efficient in the use of water and fertilizers.

Its approach is definitely within the framework of CSA contributing to adaptation, mitigation and productivity pillars.

