



Energy from photosynthesis for 500 million Europeans

This is how the solar greenhouses of southern Europe work.

Brussels, Belgium (28.12.2020) - Thanks to the greenhouse crops of southeast Spain, which occupy an agricultural area of 35,000 hectares distributed between Almeria and Granada, 60% of the European population can consume fresh, healthy and natural fruit and vegetables any time of the year, even in the winter months when low temperatures prevent continental production.

The value of a microclimate

The coast of Almeria and Granada has an average of more than 3,000 hours of sunshine per year. This, together with the use of plastics covering the crops, has allowed this area to go from having a subsistence agriculture to being the most advanced and productive system in the world. In fact, in 2017, the UN chose Almeria and Granada as the best example of sustainability to feed the world. A system that feeds on sunlight alone.

Energy from photosynthesis instead of photovoltaic energy

When talking about solar greenhouses in southern Spain, many people mistakenly think that they work thanks to the photovoltaic energy produced by solar panels transforming solar energy into photovoltaic energy. The reality is that in solar greenhouses, sunlight is transformed by the natural process of photosynthesis inside the leaves of the plants to nutritious and healthy energy without any solar panels. Photovoltaic energy is transformed, for practical purposes, into electricity, while here solar energy is transformed into vitamins, minerals, antioxidants and fibre, forming delicious fresh fruits and vegetables.

As Jan van der Blom, head of the agro-ecology department of the Association of Producer Organizations of Fruit and Vegetables of Andalusia (Aproa), explains, "in solar greenhouses the sun's rays hit the plastic covers, allowing the necessary light to pass through so that the plants can carry out photosynthesis, absorbing CO₂ from the air and transforming it into rich and healthy nutrients. In this process, large amounts of oxygen are released into the atmosphere."

Hence, 96% of the energy used in the solar greenhouses of Almeria and Granada comes solely from the sun, without the need to use either other energy sources or fossil fuels. This model differs significantly from the production methods of other greenhouse surfaces, where artificial heating and lighting systems are used, consuming fossil fuels and up to 30% more energy and generating pollution in the process.

Sun and plastics: a healthy and sustainable binomial

The combination of sun and plastic creates the ideal conditions for plants to grow, not only protecting them from bad weather or pests but also taking advantage of the resources of light, temperature and humidity.

The plastic covers used in the solar greenhouses, apparently very simple, are however the result of many years of research and innovation. Nowadays the plastic sheet of the solar greenhouses' cover is composed of several layers with different additives that give it interesting properties for cultivation.

Thus, the outer layer contains agents that block of the excess ultraviolet light that is not of use for the plants. It also makes the entrance of insect pests more difficult, since they need this wavelength to be able to see. On the other hand, during the night the inner layers prevent the loss of the heat accumulated by the soil during the day. In addition, these layers integrate compounds that hinder the proliferation of some fungi and the excessive condensation of water in conditions of high humidity.

The covers are replaced every three years and due to their high recyclability are collected by specialized companies to be reused. Later, they are frequently used in the manufacture of garbage containers, urban furniture, etc.

The greenhouses in the southeast of Spain are exclusively fed by sunlight, with the help of natural ventilation and roof bleaching as climate control systems. Natural ventilation allows the control of temperature, humidity and CO₂ concentration inside the greenhouse, while the natural calcium carbonate in the plastic film reduces the amount of solar radiation that is transmitted into the greenhouse during the periods of greater insolation, which allows the crops to carry out their photosynthetic activity and, in addition, provides the energy that heats the plants, the soil and the air. This absolutely sustainable and natural system guarantees healthy, tasty, high-quality, varied and fresh products all year round.

About CuTE SOLAR:

The EU financed CuTE-SOLAR is a promotion program that brings together a consortium made up of the Association of Producer Organizations of Fruit and Vegetables of Andalusia (APROA-Spain), the Spanish Fruit and Vegetables Interbranch Association (HORTIESPAÑA) and FruitVegetablesEUROPE (EUROFEL) The campaign aims to raise awareness of the specific characteristics of agricultural production methods in the EU solar greenhouses, especially in key areas such as sustainability and respect for the environment and people, and the safety, quality and traceability of crops. Actions will be conducted in three EU countries (Belgium, Germany and Spain) from 2020 to 2022.

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