Why PV4Plants?

- Creation of a flexible system to involve end users in the use of agriPV technology and promote collaboration between agricultural and photovoltaic infrastructure.
- Development of a methodology to study how crops grow under different types of light and demonstration of how the agriPV system works with different weather patterns, geography, solar radiation or various types of crops.
- Adaptation to specific pilot requirements to increase the efficiency of the system, by using materials (glass-based color converters) added to solar panels to modify the color of the light that they absorb and solar panels that capture light from both sides.
- Proactive Facility Control and Operation of the agriPV system to optimize its performance.
- Increase the recyclability and reusability of materials throughout the lifecycle of the agriPV system
- Development of circular local economy models that reduce waste and promote sustainable practices.
- Creation of a policy brief that offers recommendations to EU policy makers on how to promote the widespread use of agriPV projects.

Consortium

- Kalyon Gunes Teknolojileri Üretim
- R2M Solution Spain
- ODTU-GUNAM
- Tat Gida
- Tekin's Gartneri
- Confederación Abulense de Empresarios
- Smart Farm Sensing
- Ener2Crowd
- Ambiente Italia
- Cluster Viooikonomias Kai Perivallaontos Dytikis Makedonias
- Technical University of Denmark
- University of Sheffield
- Yildiz Technical University
- Diputación de Ávila

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PV 4 Plants

AgriPV system with climate, water and light spectrum control for safe, healthier and improved crops production

What is PV4Plants?

PV4Plants promotes the synergy of the agriculture and the energy sector thanks to an innovative agriPV technology that allows the integration of solar photovoltaic (PV) modules with agricultural activities. The objective is to improve growing conditions and land use efficiency, while also producing renewable energy, by utilizing a technology called light spectrum engineering. This technology optimizes the performance of sunlight and contributes in creating an improved microclimate beneath the agriPV panels. Additionally, a real-time monitoring system is implemented to keep track of multiple indicators, further enhancing the system's effectiveness.

In numbers

- 25.000 €/year saved in electricity bills
- 50 new jobs created
- >0.5% efficiency
- 117.000 kWh/year of renewable energy produced
- 35t/year greenhouse gas emissions avoided
- 10%-20% reduced water evaporation

Pilot sites

Bursa, Turkey

This pilot site is a 20mx20m open field owned by Tat Gida San. A.S., the largest tomato company in Türkiye, where tomatoes and green peas seedlings are cultivated. For the testing, around 1000 tomato and 4000 green peas seeds will be planted. The objective of this pilot is to lower the cost of energy and irrigation, making the water pumps for irrigation and the assembly line entirely self-sufficient.

Ávila, Spain

This 20mx20m open field pilot site will be the first agriPV project in the world for the growth of duckweed and microalgae crops beneath innovative photovoltaic panels. Kerbest is an agricultural company participating in the Spanish pilot. The site includes a treatment plant called nitrification and denitrification (N-DN) that separates a liquid fraction of slurry matter from animal farming. This liquid fraction is utilized for the cultivation of duckweed and microalgae crops. The energy produced by the photovoltaic panels will be utilized to improve the efficiency of the N-DN plant, which is responsible for producing the liquid base used in the crop growth.

Hoje Taastrup, Denmark

This pilot site is an open field of a sustainable farming company, Tekin's Gartneri, in which different ecological crops are cultivated (e.g. onions, lettuces.)The farming activities are taking place in 15 green houses and 4.5 hectares of open fields, and the sustainable products are traded in vegetable markets or sold in large local outlets or supermarkets. The objective of this site is to increase energy self-sustainability while reducing water use. For that, field irrigation will be done with the help of agriPV's generated electricity.