AGRIVOLTAICS

ENERGY PRODUCTION IN THE FIELD – DOES IT WORK?

In cooperation with the company Insolight, the two research groups Renewable Energies and Horticulture have set up an agrovoltaic trial. Lamb's lettuce is now being grown under solar modules with dynamically adjustable light transmission. How sustainable is the combination of energy production and agriculture?

The transparent solar panels from Insolight (figure on the left) possess a micro-tracking technology with which light transmission can be adapted. Lamb's lettuce is grown under the modules at the Grüental campus in Wädenswil (figure on the right).

Land is a rare commodity. The dual use of agricultural land for energy production and the cultivation of crops or animal husbandry, also called "agrivoltaics" or "agrophotovoltaics", is an approach that is increasingly gaining socio-political interest in recent times. At the same time, the combination of arable farming and power generation requires comprehensive know-how in technical as well as agronomic issues in order to find an ideal design for the respective location and the specific use with the different requirements.

The Swiss company Insolight, based in Lausanne, set itself the goal of bringing the next generation of solar modules to the market back in 2015. Their transparent THEIA solar modules are based on optical micro-tracking technology: direct sunlight is concentrated on the solar cells while diffuse light is transmitted. This mode ("E-mode") serves to optimise energy production, which, according to the manufacturer, can increase it by up to 50 %. The special feature of the modules is the "intelligent", i.e. adjustable light transmission between two modes. In the second mode, the maximum light transmission ("MLT-mode"), 70 % of the sunlight reaches the plant and can thus be used for photosynthesis. The modes can be set using an algorithm or online input and can be linked to specific times or light values, for example.

The Renewable Energies and Horticulture research group have now set up a trial with nine Insolight solar modules at the Grüental campus. Over the next few months, lamb's lettuce will be grown both under the modules and on a control plot, its growth will be investigated and compared between the

two cultivation methods. The trial will last for at least one year. Interested persons can view it at the Grüental campus; it is located behind the chicken coops.

Contact persons:
Mareike Jäger, Horticulture Research Group
Sven Strebel, Renewable Energy Research Group