

SESSION 8: OPEN SESSION / SÉANCE OUVERTE / OFFENE THEMEN

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SUSTAINABILITY IN THE IRRIGATION MANAGEMENT – SUCCESS CASES WATERING BY SOLAR ENERGY

ABSTRACT

Irrigation is a must in semiarid climates' agriculture, where the rainfall is below 400 mm, the humidity is below 50% and summer's precipitation is negligible, so water crop needs have to be complemented by watering.

Most of the Spanish sugar spring area belongs to the previously mentioned climate. This means a disadvantage due to the extra cost in fuel, but on the other hand the advantages are the sugar beet crops grow in optimum conditions, the last season average was 105 t/ha adjusted sugar and the records are broken every year, and the yields are very uniform, insurance and little weather dependent.

An irrigation system using just solar energy was established in several farms in Northern Spain. A reduction on energy cost of 80% and 100% reduction on CO₂ emissions were reached. The main innovation is the system allows to irrigate without neither additional batteries nor stored water in ponds. The irrigated area in these pivot installations ranged from 50 to 120 ha, and photovoltaic power ranged from 70 till 120 kW-p. The cost of watering moved from 0.17 €/m³ to 0.03 €/m³, and the saving on energy allows paying back the investment in 5 years. As an additional advantage the facilities are easy to control fully automatically for a comfortable management.
