WATERING WITH A DIFFERENCE

A main objective of SCORRES (Smart Control of Rural Renewable Energy & Storage) is the development of financially viable, robust, location-specific irrigation systems for the Indian agricultural sector.

The systems are optimally sized to deliver 'right-time, right-volume' irrigation to farms, reducing water and energy consumption, increasing crop yields and food nutrient content and improving soil condition.
The "smart" part of the system is an ICT software

Left and right page: Buddha Garden, the irrigation system

Buddha Garden

which designs, forecasts and controls the crop-specific irrigation. A water balance model uses crop information combined with soil moisture data from sensors and weather forecasting to control valves, which activate the irrigation. Self-learning algorithms improve the irrigation forecasts to respond to crop needs. The system also optimises the solar photovoltaic panels and batteries to energise solar pumps and irrigation delivery.

The project develops clean technology that addresses the soil-water-energy-food nexus with reduced water and energy consumption of up to 80%.

It is interesting to note that Indian agriculture is currently responsible for 22% and 85% of India's total electricity and water consumption respectively.

Heriot-Watt University in Scotland in the UK are developing SCORRES in collaboration with Findhorn Foundation College, Auraventi and Scene Connect (UK) and Auroville Consulting, Buddha Garden, Centre for Scientific Research and Sustainable Livelihood Institute (Auroville, India).

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Martin Scherfler

The farmer's point of view

Buddha Garden is a small 12-acre farm in Auroville growing vegetables and fruits. For the past year we, in collaboration with Heriot Watt University and their SCORRES project, have been researching the relative advantages of using a smart watering system on our farm. With six research beds in three different parts of the farm, we compare the smart automatic system with our normal watering regimen. To begin with, the amount of water given to the various plants by the automatic system was based on previous research carried out by Buddha Garden. That research had found out what inputs different varieties of vegetables needed at different stages in their growth. As more data has been received from the beds about plant growth, soil conditions and water (including rain) received, the system has learned to more precisely and automatically control the irrigation by a predefined algorithm.

The plants have therefore received optimum irrigation for optimum production. As a farm that wants to be both financially and ecologically sustainable, lower water use and increased crop production are most important to us. We have found that when our vegetable plants are watered with the automatic system, according to the predefined algorithm, we have healthier plants that produce more crops. Compared to those crops watered with our manual system, they yield more while using less water. The automatic system also saves us a lot of time as we no longer have to manually turn the irrigation system on and off.