

Chile's Agricultural Innovation Foundation (FIA) has provided CLP55.5 million (US\$98,088) for a pilot project to test the use of geothermal energy to control greenhouse temperatures, with positive results observed to date. 

The initiative in Lampa is the first of its kind in the South American country, and was developed by agricultural businessman Sergio Aguilar.

Initiative coordinator Abdo Fernández said the technology "has managed to control high temperatures in the hydroponic beds of watercress, showing an improvement in the crop."

An FIA release said production of greenhouse crops required low variability in thermal regimes with elevated minimum temperatures above 12°C (53.6°F), as cold temperatures below this level led to slowed growth and symptoms of deterioration.

On the other hand, problems also start to arise in greenhouse crops when temperatures rise above 28°C (82.4°F), which is why cooling systems are important to keep the heat at bay, particularly in the summer.

Fernández said the system under trial pumped water from a well through a machine, which enters at 15°C (59°F) but is reduced immediately to 8°C (46.4°F) when heat needs to be delivered. In contrast, when greenhouse temperatures need to be reduced during summer, the water that enters becomes 3-4°C warmer.

"This temperature differential is what is used to heat or cool the water in the heat accumulation system, from where it is later distributed to the greenhouse through environmental and water cooling systems," he said, adding that very good results had been obtained in hydroponic beds.

The release said the use of geothermal power in greenhouses could reduce energy costs by 50% compared to conventional cooling methods.

The technology is often considered as a midway point between efficient energy and non-conventional renewable energy, as it also uses energy from the electricity grid to function.

Results from the trial are expected to be released in the first half of this year.

Photo: Wendell Smith via Flickr Creative Commons

www.freshfruitportal.com