



# Thermochemical Fluids in Greenhouse Farming

## Tomato Production in Closed Greenhouses with Liquid Desiccant Climate Control Systems -Tunisian case study-

Tomato seedlings of the indeterminate variety (MURANO F1) were transplanted into the greenhouse in a grid pattern, with rows spaced 1 meter apart and plants spaced 0.4 meters apart, resulting in a density of 2.9 plants per square meter.

Given the dynamic water requirements influenced by both the physiological stage of the plants and prevailing climatic conditions, a daily automated irrigation protocol was instituted. Throughout the growth cycle, a total of 26,000 liters of water were applied to sustain the tomato crop, culminating in the production of 200 kg of fresh tomatoes.



Rainwater collected from the greenhouse roof was the main water source, without significant supplemented by water recovery through crop evapotranspiration facilitated by Liquid Desiccant Climate Control technology.

The mean yield achieved approximately 45 tons per hectare, aligning with the lower threshold of satisfactory yield as per FAO database standards. In Tunisia, the average greenhouse tomato yield is 55 tons per hectare (GIL, 2014). The water utilization efficiency for harvested yield ( $E_y$ ) for fresh tomatoes was approximately 8 kg per cubic meter, indicating a deficit of 2 kg per cubic meter compared to the FAO-recommended efficiency rate ( $EY$ ).

Further research aims to refine methodologies for optimizing tomato yield in the upcoming cycle. Emphasizing water efficiency and economic profitability, these efforts focus solely on utilizing TheGreefa system.



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