

As part of the SwitchMed programme, UNIDO supports industries in the Southern Mediterranean through the transfer of environmental sound technologies (MED TEST II) to become more resource efficient and to generate savings for improved competitiveness and environmental performance.

## Palestine

### Pal Gardens

### Food and beverage sector

#### Context

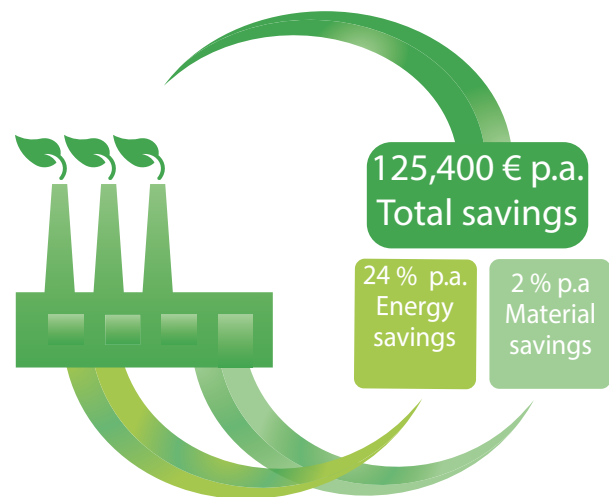
Number of employees:	15 full time / 60 seasonal
Key products:	Various types of dates, bell peppers, tomatoes, and herbs
Main markets:	Local and international
Management standards:	ISO 22000, BRC, GlobalGap, ETI

The Jericho -based Pal Gardens is part of the Sinokrot Global Group (SGG), and was founded in 2009. The company produces various types of agricultural products, mainly Medjool dates and bell peppers, tomatoes, and herbs. The company exports to several regional markets such as the Gulf countries and to the USA and Europe. Pal Gardens process dates from company-owned farms and from other producers in the Jeicho valley.

*“Our target with the project is to reduce consumption of energy, materials, and water. These savings will enhance our ability to further penetrate the local market and increase our exports worldwide. It became clear to us during MED TEST II project that with a resource efficient and cleaner production we will be able to yield both environmental and financial benefits.”*

Eng. Momen Sinokrot  
General Manager

#### Benefits



Graphic: UNIDO

The MED TEST II project identified total annual savings of 125,400 euros in energy and raw materials costs with an estimated investment of 462,000 euros. The average payback period is calculated at four years. The company has already implemented 80% of the feasible savings measures identified, and other recommended measures are being considered for implementation later. It is worth mentioning that senior management decided to implement a solar photovoltaic system on the roof of the facility. This will save energy and considerable monthly costs related to electricity consumption. In total, the identified measures will annually reduce the CO<sub>2</sub> emissions with 1,500 t (CO<sub>2</sub> equivalent).

After implementing the energy efficiency measures developed within the MED TEST II project, the company will save approximately one quarter of its original energy requirements as well as 2% of raw materials. From the very beginning of the MED-TEST II project, the company showed strong commitment to Resource Efficient and Cleaner Production (RECP) and demonstrated an understanding of the need for training company staff on how to apply the RECP tools. Senior management also showed significant interest in protecting the environment in the catchment area of the Dead Sea and its unique ecosystem, also the area where the main raw material for Pal Garden – Medjool dates – are grown.

## Saving opportunities<sup>1</sup>

Action	Economic key figures			Resource savings & environmental impacts per year		
	Investment euros	Savings euros / yr.	PBP years	Water and raw materials	Energy MWh	Pollution reduction
Reducing losses of Medjool dates	5,000	20,000	0.2	10 t of raw materials	-	662 t of CO <sub>2</sub>  10 t of solid waste
Energy efficiency of cold storage rooms	3,000	15,500	0.2	-	130	
Insulation of refrigeration and air conditioning units	1,000	2,000	0.5	-	16.8	
Energy efficient lighting	3,000	2,900	1	-	24	
Installation of photovoltaic power station	450,000	85,000	5.3	-	700	
<b>TOTAL</b>	<b>462,000</b>	<b>125,400</b>	<b>3.7</b>	<b>10 t of raw materials</b>	<b>871 MWh</b>	

<sup>1</sup> Numbers based on production value from 2016

### Reducing losses of Medjool dates

Company staff developed and implemented the following measures addressing the problem of high material losses due to dates being out of specification. The first measure was to improve the primary sorting system after harvesting in the farms and the secondary system within the company (by adding better lighting and hiring new employees for better efficiency of sorting). The second measure focused on drying the dates in a sealed plastic room with fans and greenhouse heated air.

### Energy efficiency of cold storage rooms

A number of easily implemented energy efficiency measures in the cold storage rooms ranged from better insulation and management of freezers to changing the defrosting time. By implementing the recommended no-cost good housekeeping and other low-cost measures financed from the maintenance budget, the company achieved not only significant savings and a reduction of CO<sub>2</sub> emissions but also an improvement in workplace safety (for instance, ice on the floor was removed).

### Insulation of refrigeration and air conditioning units

Quantification of losses caused by the uninsulated piping system and parts of the freezing units moved the company to insulate the piping. This energy efficiency measure increased the cooling and freezing efficiency, thus lowering the energy consumption.

### Improved lighting

Inefficient fluorescent lamps are being replaced by high efficiency LED tube lamps. Currently, 80% of fluorescent lamps have already been replaced, and the rest of the inefficient lamps will be replaced by the end of 2018.

### Solar PV System

Company management decided to explore the possibility of using solar energy available throughout the year in the Jericho area at the bottom of the Dead Sea Valley. The company developed an investment project to install photovoltaic equipment that will generate 700 MWh of electric energy per year. Its installment will significantly reduce not only the electricity bill, but also the company's carbon footprint. Excess electricity produced by Pal Gardens PV installation will also be sold to the grid.

*“Applying the TEST methodology in our company helped us to see our hidden costs and to take advantage of significant saving opportunities. We have applied 80% of the savings measures that will help us to reduce energy and raw materials losses.”*

Eng. Momen Sinokrot  
General Manager

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