



IMPROVING AGRICULTURAL PRODUCTION IN THE GAZA STRIP

The agriculture sector in the Gaza Strip faces a number of systemic issues; most prominent is the depletion of its coastal aquifer, which is the only source of freshwater. The aquifer is also extremely polluted; and high groundwater salinity leads to poor plant performance for some of the most produced vegetables in the Gaza Strip. Against this background, it was necessary to introduce farm-level technologies that increase resource use efficiency and sustainably reduce groundwater consumption. One method of production that could contribute to this goal was soilless culture, also known as hydroponics. The project aimed to identify, assess and disseminate applicable, low-tech, hydroponic vegetable farming methods for sustainable agricultural production in the Gaza Strip, and promote its adoption.



WHAT DID THE PROJECT DO?

Two beneficiaries received inputs and technical training to establish and manage small-scale, commercial, low-tech hydroponic farms. Despite the unique challenges faced in establishing hydroponics in the Gaza Strip, such as fluctuating groundwater quality and restricted fertilizer availability, annual income results showed that the pilot hydroponic farms were nine times more profitable than conventional methods. In addition, the hydroponic systems used far less water and fertilizers. Four experimental trials were conducted at Al Azhar University. The results of these trials indicated that low-tech hydroponic lettuce outperformed conventional, soil-based techniques for yield. The results also showed that large fruiting vegetables with more complex nutrients demands (such as tomatoes) were technically feasible using low-tech hydroponic systems.

IMPACT

The outputs of the project contributed to the realization of water-efficient agribusiness ventures for smallholder farmers in the Gaza Strip, and to boosting farmers' incomes. Project results showed that the difference in profitability for low-tech hydroponics compared with conventional methods was largely due to the ability to utilize very high planting densities. Low tech hydroponic systems also allow for polycultural vegetable production to be carried out all year round, as well as staggered planting, enabling continual harvesting. This will substantially improve food availability in the Gaza Strip, and generate further income for the farmers. In addition, low tech hydroponics help lower the total water demand for agriculture in the Gaza Strip, and decrease chemical fertilizer usage, reducing the threat of further damage to its aquifer.

KEY FACTS

Contribution
USD73 000

Duration
January 2015 - March 2017

Resource Partners
Osprey Foundation

Partners
Al Azhar University, Gaza

Beneficiaries
Smallholder farmers and fishers, Al Azhar University, Gaza

ACTIVITIES

- Two beneficiaries, located in Gaza City and North Gaza respectively, received inputs and technical training to establish and manage small-scale, commercial, low-tech hydroponic farms measuring approximately 150m², with a productive capacity of 3 500 - 4 000 lettuce heads.
- Al Azhar University conducted four experimental trials at its Al Mughraqa campus research station. Three trials on lettuce production compared low-tech hydroponics and soil-based techniques; and the fourth trial tested the significance of salinity when growing tomatoes in low-tech hydroponic systems.
- Empirical data for several other crops successfully grown by the two commercial farmers, including mint, broccoli, peppers, celery and cucumbers, were collected.
- All the data collected from the two pilot farms, and the experimental trials, were analysed by FAO and Al Azhar University.
- A technical manual on low-tech hydroponic farming in the Gaza Strip providing technical advice and guidelines for non-technical readers was produced, in order to replicate the success of the pilot farms.



SUSTAINABLE DEVELOPMENT GOALS



Project Code

FAO: MTF/GAZ/008/OSF

Project Title

Pilot hydroponic Use for Improved Food Availability in the Gaza Strip

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Osprey Foundation and FAO

The Osprey Foundation is an organization that funds small-scale water and sanitation projects in the West Bank and Gaza Strip and their neighbouring/adjoining environments.

The Foundation is particularly interested in projects that prototype or experiment with new methodologies that may be applicable beyond the specific site or location being funded.

Under this partnership with the Foundation, FAO could assess, disseminate and promote hydroponic vegetable farming methods for sustainable agricultural production in the Gaza Strip.