



Water Shortages Drive Switch from Irrigation to Hydroponics

Dwindling water resources have persuaded the government of Saudi Arabia to shut down the domestic production of low-value irrigated crops. However, the Kingdom is developing as a producer of high-value food crops using sophisticated hydroponic technologies.



Eng. Najeeb Al Humaid, Senior Consultant, Farrelly & Mitchell

Water Restrictions

The Middle East and North Africa (MENA) region is home to around 5 percent of the world's population, but has only 1 percent of the world's renewable water resources. It also has the highest per capita rates of fresh water extraction, exploiting more than 75 percent of its renewable water resources, due to the lower absolute amount of water available in the region.

New Strategies

Governments in the region have been adopting new strategies for balancing their scarce resource and growing demand for fresh water.

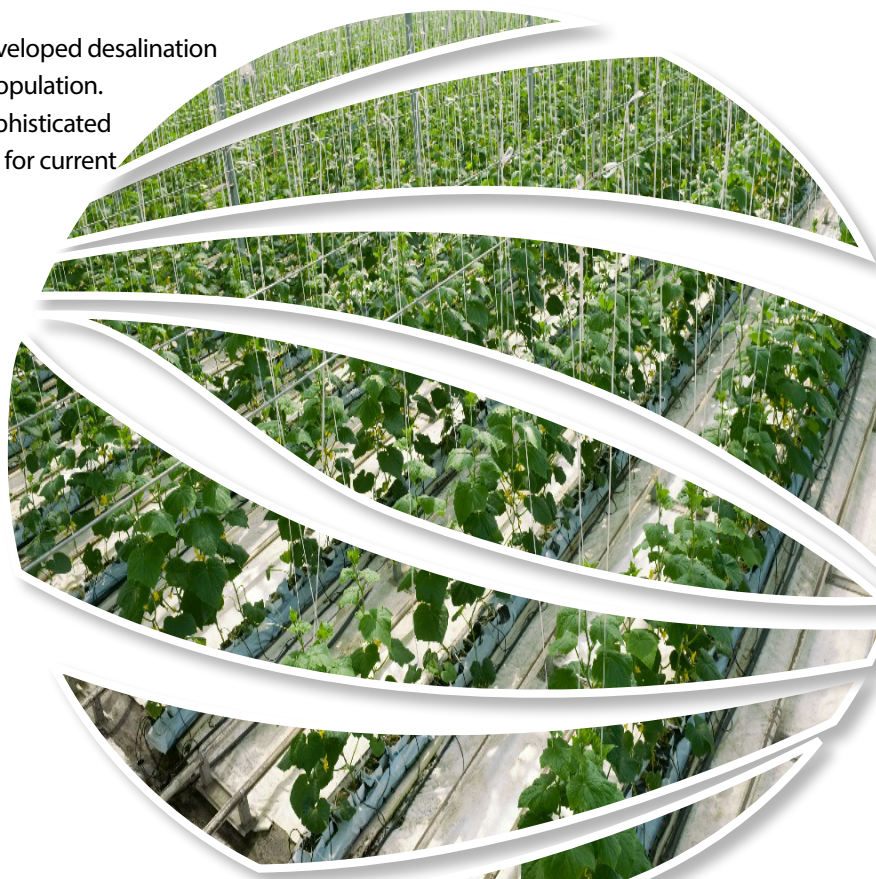
The government of Saudi Arabia has developed desalination plants to provide drinking water to its population.

Other governments have developed sophisticated water storage facilities to manage water for current and future use.

Much of this water is used for food production. The Middle Eastern countries - Bahrain, Egypt, Jordan, Kuwait, Lebanon, Oman, Qatar, KSA and the UAE - comprise 367 million hectares, or less than three percent of the world's total land area.

However, the greater part of the area is desert, of which only a very small portion is suitable for agriculture. The region relies heavily upon irrigation for agricultural production.

"Government policy is supportive of the domestic production of high-value crops, particularly fruit and vegetables such as tomatoes, cucumbers, citrus fruit and bananas."





Saudi Agriculture

Despite contributing a nominal 3 percent to the country's GDP, the Saudi agricultural sector uses more than 85 percent of the total water available. The Kingdom is the world's third-largest consumer of water, with daily per capita consumption of almost 250 litres. Agricultural production has always been dependent upon the dwindling water resources of the Saudi aquifers. As a result, Saudi Arabia has chosen to eliminate the domestic production of water-intensive crops such as wheat, a commodity in which the country was once self-sufficient.

Government policy aims to replace low-value crops, such as hay, wheat and barley, with imported commodities, purchased on world markets. However, government policy is supportive of the domestic production of high-value crops, particularly fruit and vegetables such as tomatoes, cucumbers, citrus fruit and bananas.

Country	Land Area (1,000 Ha)	Water (km2)	Irrigated Land (km2)
Bahrain	70	0	40
Egypt	99,545	6,000	34,220
Jordan	8,824	540	750
Kuwait	1,782	0	130
Lebanon	1,023	170	1,040
Oman	30,950	0	720
Qatar	1,159	0	130
KSA	214,969	0	16,200
UAE	8,360	0	760

"Because of the very significant capital investment required, hydroponics is best suited to high-value fruit and vegetable crops"

Figure 1: Select Countries - Area of Irrigated Land. Source: Blominvest

Leading Technology

Hydroponics will be a key technology for developing the horticultural sector across MENA. This is a method used to grow plants using mineral nutrient solutions, without soil. In our experience, the technique is very useful for growing plants in regions with unfavourable climatic conditions or with significantly limited arable land, such as the Middle East. It consumes 70–90 percent less water than conventional soil-based agriculture, because hydroponics allows for the recycling and re-use of water.

Hydroponics has the potential to become a leading technology, because of its potential for high output and efficiency. However, because of the very significant capital investment required, it is best suited to high-value fruit and vegetable crops. We also find that these projects are best-suited to large-scale corporate projects, because of the requirement for scale.

Several governments in the Middle East are at different stages in terms of the implementation of this technique. Oman has an estimated 80 greenhouse projects throughout the country and the government of the UAE is extending loans for hydroponic projects to farmers through the Khalifa Fund for Enterprise Development, an Abu Dhabi government organization that helps develop the Emirate's businesses. Bahrain is building its first hydroponic "garden," which would demonstrate best practice for the technique. Initially, Saudi investors adopted a wait-and-see approach to hydroponic farming, until the government clearly formulated its future water policy. However, in the first half of 2014, Pegasus Agri-Tech announced plans to build a 20,000 metre square hydroponic farming facility, to produce lettuce, tomatoes, basil, thyme and rocket.

FARRELLY & MITCHELL

Food & Agri-Business Specialists



© Farrelly & Mitchell 2015

Contact Details: Farrelly & Mitchell

www.FarrellyMitchell.com

Head Office:

Malachy Mitchell
Managing Director

Unit 5A Fingal Business Park
Balbriggan
Co. Dublin
Ireland

Tel: 00 353 1 690 6550
Fax: 00 353 1 883 4910
Mobile: 00 353 86 806 0843
Email: mmitchell@farrellymitchell.com

Middle East Office:

Mohammed Hajjar
Regional Director

Al-Rusais Building
Suite 510
Olaya Main Road
Riyadh
Kingdom of Saudi Arabia

Tel: 00 966 11 4634406
Fax: 00 966 11 4648952
Mobile: 00 966 54 338 7199
Email: mhajjar@farrellymitchell.com

Disclaimer:

The information in this article is intended to give information in general nature, great efforts has been exerted to ensure the accuracy of this data at the time the article was written Farrelly & Mitchell Business Consultants Ltd. and its Branch offices or affiliates does not provide any implicit or explicit guarantees on the validity, timing or completeness of any data or information in this article. Also we assume no responsibility on the appropriateness of the data and information for suiting any particular purpose or reliability in trading or investing.

Please note: Unless provided otherwise and in writing from us, all information contained in this article, including logo, pictures and drawings, are considered property of Farrelly & Mitchell Business Consultants Ltd.