

## “Growing Vegetables in the Desert” (14)

As the EU strives to reduce its reliance on imported food, farmers are coming up with creative ideas of how to grow produce in the desert. Salim Essaid went along to find out how they're reaping the rewards of alternative agriculture.

High and humid, it's not the ideal environment for growing plants. Yet Amjad, a Syrian farmer in the UAE produces a variety of salad vegetables and a selection of herbs in the inhospitable climate of the region. How? Using a *hydroponic farming system which is* an innovative method of growing plants without soil - using a liquid nutrient solution.

Chilled water passes through these insulating tubes to nourish plants like this Boston lettuce, growing in a fibrous material made from crushed rock called rockwool which holds water like a sponge. And once used up, that same water drains back to be filtered, recycled and used all over again.

Using alternative farming systems has saved Amjad around 90 percent of the water that he would have used by deploying traditional farming methods.

Hydroponics combines with a vertical farming rotatory field - a stackable, revolving farm bed with 18 rows. This set-up has also saved Amjad space, allowing him to be located closer to the city and deliver produce to stores faster, which in turn has reduced the farm's environmental footprint.

“That rotatory greenhouse, which we applied in 2005, is the our rotatory greenhouse applied in all the Middle East and it's the largest one in all this area. Due to the rotatory system, if you are going to plant in the same area for traditional agriculture it would need around six times like [the space of] this one.”

*The Emirates Hydroponics Farms* is approximately two hectares large, equivalent to the size of two rugby fields. Amjad is able to produce around 500,000 lettuce plants - including nine varieties - and two million herbs each year.

Like Amjad, many UAE-based farmers grow their crops on 'marginal land' - meaning that it has low agricultural worth due to factors like poor soil, little freshwater and harsh temperatures.

And since the UAE is limited to the variety and quantity of crops they can grow on its land, the country depends heavily on imports from countries in South America, Europe and South east Asia. Working to find home grown solutions in the UAE and other marginal environments is the International Center for Biosaline Agriculture. They are exploring ways to get the most out of scarce resources like fresh water.

“If we think about sea water, you think we are very rich in water because we do have sea, we do have a lot of saline water. So what if we can use saline water to produce crops.”

Example of crops that are both salt and heat tolerant include quinoa and mustard plants.

The ICBA is also using integrated aquaculture to use naturally salty groundwater to the very last drop. It is first desalinated whereas the salt is removed to produce fresh water for farming. It also produces brine – a highly concentrated salt water which is used to farm fish.

In a separate operation, this brine water is enriched with fish waste products, and used to fertilise a sea-bean-like vegetable called salicornia.

Yet another growing trend in regional agriculture is so-called precision farming, which gives plants the exact amount of what they need.

“The Date palms require about 50 litres [of water] a day in the winter and about 150 litres in the summertime. Whereas if you talk to any farmer, they provide more than 300 liters a day per tree. So what you do with precision agriculture is that you have information to the farmers that they don’t need to use more than 50 litres, and a but lso you have sensors to make sure the irrigation stops stop at a certain time.”

This type of ‘smart farming’ with drones and sensors are used to measure the plant’s humidity and hydration is being applied in a variety of ways in the UAE. And the country is also planning to build the world’s largest vertical farm later this year. On top of that, [Masdar](#) city, a \$15 billion – an ecofriendly city in the desert of Abou Ghabi plans to test smart home farms, plus keep looking at ways to better conserve energy and water nationwide.