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## FEATURE STORY

### SOILS BUILDS ITS FIRST LEARNING GARDEN

At our first seed exchange and awareness gathering in April 2016, we met two young Danish ladies, *Iben* and *Sofie*, who had just founded an NGO called **Zaher - Grow to Learn**. Sofie and Iben had the idea of establishing learning gardens for **Syrian refugees** in the **Bekaa**. After several meetings, the idea developed into a plan and the plan into a pilot project.

3 NGOs joined their efforts to make this project a reality: **Zaher - Grow to Learn**, **SAWA for Development and Aid** and **SOILS Permaculture Association Lebanon**. We chose the **Baraem Al Mustakbal** center for educational support run by SAWA in Bar Elias - Bekaa as the location for the learning garden that would serve as a platform for education, therapy and sustainability. It would offer the students and the community a space to express themselves within the rigid academic framework, provide an opportunity to acquire much needed skills in sustainable agriculture, and - most importantly - become an outlet for positive growth within the context of the crisis in neighboring Syria.

I designed the program with the help of *Alexis Baghdadi* from SOILS and our friend and fellow permacultivator *Karim Hakim*. This was the first time we tackled such a project, so the preparation was challenging, especially as we wanted to take a holistic approach and lay the foundation for future interventions in the space.

The program consisted of **6 training sessions** combining theoretical and practical approaches designed to maximize participation with interactive presentations, demonstrations and activities that would lead to establishing the learning garden. We started off with a broad look at agriculture, followed by workshops on plants, soil, water and the environment, and concluded with a holistic perspective on the integration of all the elements and resources to design a sustainable garden. We were surprised by the interest of the community in the project. We had around **25 participants** per session on average after we had planned for only 15!

A group of 8 young men and women from the neighboring camp attended the full program and helped design the garden and plant it. They were conveniently referred to as "ambassadors," as we hope they will carry on the work after another season or two. They are also responsible for monitoring and maintaining the garden on a weekly basis.

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Photos by Karim Hakim

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The 93 m<sup>2</sup> garden we worked on was the backyard of the Baraem Al Mustakbal center. The north-south axis cuts the property almost diagonally, with the garden on its east corner. The garden is shaded by the school building in the afternoon, and in winter a neighboring building to the south shades it as early as 10:00 am. The topsoil is mostly brownish silt and turns to clay at a depth of 30 to 50 cm. Some soil patches contained residues of previous earthworks and construction. Clean irrigation water was available through an underground water pump.

When we first saw the garden in June, it had been plowed. As such, we could not get an idea of the different microclimates already present. There were very few plants, which are indicators of many factors including fertility, moisture, sun and pollutants, among others. Fortunately, the plants that had managed to resprout were beneficial ones, including squirting cucumbers, calendula and hollyhock. A patch of plants along the wall of the kitchen was especially vigorous. After a thorough inspection, it appeared that those plants were watered, and probably fertilized, by grey and black water leakage. With Karim's experience in plumbing, we managed to successfully seal the faulty pipes then cover them with rocks excavated from the site. We added soil to create a raised bed for non-edible plants. Early on, we used salvaged wood to build a compost bin in which we added all the weeds and organic matter extracted from the garden.

While contemplating the design, I decided that the more diversity we add, the better. Besides water retention, organic matter accumulation and overall resilience, different plants have different lessons to teach. We wanted plants for food, wood, medicinal and aromatic use, as well as esthetic value. We only had a small shady backyard to fit all this in but, fortunately, most plants serve several functions in an ecosystem, so we were able to limit our selection.

The final design included the addition of 6 trees: 2 poplars, 1 pomegranate, 1 mulberry, 1 plum and 1 cypress. The garden already had a fig tree sprouting through the concrete, a small loquat tree, a bitter orange tree that had been cut twice and refused to die, a struggling apple tree, and a coppiced willow. We planted 9 vegetable beds throughout the garden with the help of the students and ambassadors. The vegetables included fava beans, radish, chicory, spinach, rocket, garlic, onions and beetroot. For pest control, aesthetics and additional harvest, we planted combinations of flowering perennials: callistemon, roses, trumpet vines, rosemary, lavender, verbena, chrysanthemums, an Italian jasmine and a night-blooming jasmine. A grape trellis was added to shade a teaching space in the garden where the soil was already compacted. The trellis, along with a gate and fence, were built from scrap metal lying around the school.

On December 24, 2016, we held an award ceremony and exhibition to celebrate the end of the first season of our adventure. A series of pictures, taken throughout the period of the project, were displayed to show the progress of the garden, the participants and some of the many activities that took place. The 8 ambassadors received certificates for their participation in the project. We then had breakfast with radishes and onion leaves harvested from the learning garden. To my surprise, despite irregular weather conditions this fall and winter, the garden was doing very well. The frost was evident in ice forming on the roof. However, the soil was draining well and all winter plants were growing.

This project was a trial to assess the feasibility of a learning garden in the aforementioned conditions. It was insightful on several dimensions, from the therapeutic value a garden can have on traumatized children to the effectiveness of different polycultures in the central Bekaa climate. It was, in my opinion, a successful project that should be developed further. We plan to have another program for spring, perhaps integrating additional systems to the design.

Agriculture in education is not a new thing. However, it has been withered out of educational curricula with the onset of industrialized agriculture and standardized education. Nonetheless, agriculture with a special emphasis on natural ecosystems is an essential part of life, modern and ancient. When we contemplate our source of food, oxygen and fresh water, it is bewildering that we are not taught such principles early on. Until the world starts spinning the way we think it should, this is where the emphasis should lie.

*Shared by Ghassan Al Salman*

Left photos by Zaher

**Check out more photos on Zaher - Grow To Learn's Facebook page:**

<https://www.facebook.com/zahergrowtolearn/>



## LET'S SHARE OUR NEWS

### THE MOST COST-EFFECTIVE WAY TO MAKE WATER SAFE TO DRINK

The vision of **WAVVE Stream Inc. (WAVVE)** is to provide **clean safe water** to every person in the world with a cost-effective, shrimp-based filtering gel that makes water safe for home and agricultural use.

Our story started at the **University of Houston** in **2013** when I joined 4 other students to work on a class project to prove the commercial viability of a patent owned by the university and invented by **Dr. Debora Rodrigues**. Together, we formed **W.A.V.V.E** in **April 2014**, taking the first letter of the word "water" in our original countries (W for Water, A for Agua, V for Vatten, V for Voda, and E for Eau). Only I stayed on after graduation.

I am now the CEO and president of WAVVE, a water purification company that produces a residential water filter for families in rural and agricultural areas. The word WAVVE is a constant reminder to us that we will distribute our product globally through partnerships and licenses. To date we have raised over \$400,000 non-dilutive through more than 25 international competitions, 5 accelerators, 3 incubators and 5 conferences, including the recent **BDL Accelerate** in Beirut. We are finalizing our first residential prototype, which will be commercialized in the US.

Compared to current residential countertop filters such as Brita and PUR that only focus on making your water taste, look and smell better by using a 500-year-old technology (activated carbon), WAVVE will use its patent-pending gel made from **shrimp shells** to remove **harmful contaminants from** water. The gel will come in eco-friendly biodegradable plastic cartridges that are compatible with existing countertop pitchers used with conventional filtering cartridges.

After conducting numerous market analyses and customer validation tests, we found that the drinking water of US families in agricultural regions such as **Iowa, Nebraska and California**, is contaminated with **nitrates** from the heavy use of fertilizers in agricultural runoff. Nitrates are a staple in most fertilizer mixtures and have been used throughout all developed nation's agricultural industries. **Nitrate-contaminated** water is colorless, odorless and tasteless, which makes it hard to detect. Nitrates themselves are not harmful in low quantities; however, consumed at levels greater than 10 mg/L they can pose serious health risks. The **cancer rate in De Moines County, Iowa**, for example, is **86.7 per 100,000 residents**. In **Page County**, it is **98 per 100,000 residents**. By comparison, the US average is only 62.4 per 100,000 residents. Many residents fear that water is the cause of this high incidence of cancer. Nitrate-contaminated water is also extremely dangerous to pregnant women, nursing mothers and infants. They have been known to cause serious birth defects such as "blue-baby syndrome", cyanosis and neonatal complications.

The conventional ways of removing nitrates from residential drinking water include consistently buying bottled water or installing an expensive reverse osmosis system or a filter using anion exchange resins made from plastics. WAVVE's technology is creating the only efficient and cost-effective solution. We will be selling a \$25 filter cartridge that will last over a month and will be up to three times more efficient than the best anion exchange filter on the market.

WAVVE has acquired exclusive worldwide license rights to the Intellectual Property (IP) from the University of Houston. This IP consists of a gel that is refined from the husks of shrimp, known as **Chitosan**. This waste product of the shrimping industry is produced in enormous quantities in Asia and Northern Europe. It is currently used as a food preservative, as a coagulant in medicine and as an industrial flocculant, but it has never been used for residential water filtration.

We know that water contamination is a global problem, which is why strategic expansion is necessary. After the US, we will initially focus on 2 strategic countries: France and Spain. We also know that each region around the world has its own specific contaminations, so there is no one-size-fits-all solution. WAVVE will create filter cartridges (currently in R&D) to remove other harmful chemicals like **phosphates**, as well as **heavy metals** (Chromium VI and Lead) from water, making it safe for consumption. Nutrient contamination in water is also an issue in North America, Europe and Asia. This is a problem found upstream with farmers and downstream with residents. We believe our gel could have applications in the agricultural industry as well, but more R&D is needed to evaluate quantities in larger volumes of water and verifying the proper bio-degradation of the gel and its use as a fertilizer when it has reached capacity.

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## LET'S SHARE OUR NEWS

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Our technology will be on the market by 2018 and will be available for residential use. To that purpose, we will launch a crowdfunding campaign in 2017. Follow us on Facebook (<https://www.facebook.com/wavvestream/>) for the latest updates on the company and the official launch of the campaign. We are always interested in potential new partners so feel free to contact us at [info@wavvestream.com](mailto:info@wavvestream.com).

Shared by Eric Beydoun, Founder & CEO



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## THE GOSPEL OF THE MOONCUP

Does it make sense that after thousands of years, women's cycles can only be contained by cotton - a water-intensive, and hence highly problematic, crop?

For those who don't know it already: a Mooncup is a small silicone cup with a stem at the bottom. Granted, they do require a little hands-on action, but it is nothing a woman who can already handle menstruating couldn't cope with.

To get started, the rim of the cup is pressed together to make the cup flatter. The flat rim is then folded once over to make inserting it into your vagina easier. Once the flattened Mooncup is in, it opens up and is ready to do what it is meant to do: fill up with menstrual blood. I admit that the first time - just like with pads, and later on tampons - was a little challenging, but as with many things, practice makes the master, or in this case, mistress. Before being reinserted, the cup should be rinsed or wiped clean; in countries with unsafe tap water, it should be rinsed with drinking water. And back in it goes. At the end of each cycle, the Mooncup is cleaned with hot water and stored until the next cycle.

Women who used pads or tampons before will be surprised at how using a Mooncup will make them more aware of their period and flow of blood. On average, a menstruating woman loses about 2-4 ounces per period. Unlike (non-organic) pads and tampons with bleach or chlorine added to stimulate the flow of the blood, Mooncups allow periods to take their natural flow. They can be kept inside for much longer periods than pads or tampons (that sometimes get stuck and infected). Besides the obvious environmental benefits (every year, over 45 billion feminine hygiene products are disposed of globally) they last for years and are even recyclable.

Spills are inevitable but can be contained with small, organic pads and regular users will know when it is time to empty the cup. This requires pulling on the stem before reaching for the bottom of the cup, pressing it gently to release suction and then pulling the cup out and emptying it in a toilet bowl - or outdoors, if you're hiking or nowhere near a regular toilet.

The initial investment will work out to about \$25 but it pays itself off rather quickly, usually after 6 to 8 months. This is significant in countries where the purchase of sanitary pads or tampons puts a burden on a family's monthly budget and often prevents young women from attending school during their periods.

Not a single store I checked in Lebanon stocked the Mooncup or had even heard of it, which led to slightly awkward conversations. The best way to get one would be to ask a friend to bring it from the UK. The Mooncup website ([www.mooncup.co.uk](http://www.mooncup.co.uk)) also lists distributors in other countries. It also makes it possible to order in bulk. In the late 90's in South Africa, 20 of us placed an order and we all became Mooncup disciples. There are only two sizes to choose from (A for women over 30 and who have given natural birth, or B for women under 30).

A woman's choice of menstrual product is ultimately her own personal one but I do encourage any woman who feels curious about the Mooncup, to give it a try. It works for all women, including those with a heavy flow - Mooncups hold 3 times of what a tampon can absorb. Once you get used to it, you will forget about it. Just don't forget it on the bathroom shelf...

Shared by Nathalie Rosa Bucher



Image: Wikimedia Commons  
[https://commons.wikimedia.org/wiki/File:MoonCup\\_Menstrual\\_Cup.jpg](https://commons.wikimedia.org/wiki/File:MoonCup_Menstrual_Cup.jpg)

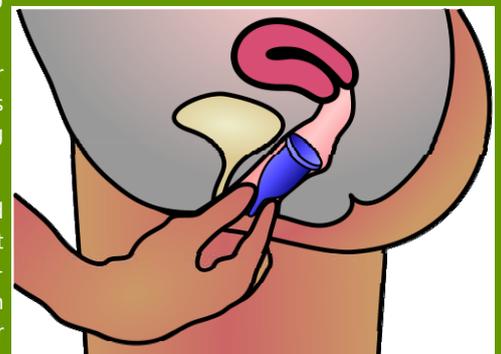


Image: Wikimedia Commons  
[https://commons.wikimedia.org/wiki/File:Menstrual\\_cup\\_insertion.svg](https://commons.wikimedia.org/wiki/File:Menstrual_cup_insertion.svg)

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## UPCOMING EVENTS

### BEIT CHABEB HIKING & CULTURAL TOUR



**JANUARY 14, 2017**  
7:30 a.m. - 3:30 p.m.

*Beit Chabeb, Metn*

Hike through the biggest village in Metn and discover traditional crafts (pottery, bells, fabric) amidst beautiful vernacular stone houses and churches.

**FEES:**  
LBP 50,000 / person (includes transport, guide and insurance)

<http://www.lebtivity.com/event/beit-chabeb-hiking-cultural-tour-with-vamos-todos>

### WINE TOUR IN BEKAA VALLEY



**JANUARY 21, 2017**  
7:30 a.m. - 4:00 p.m.

*Bekaa valley*

A visit to 3 wineries in the Bekaa valley: Clos St. Thomas, Domaine des Tourelles and Masaya. The tour includes wine tastings as well as a breakfast and lunch stop (not included in the participation fee).

**FEES:**  
LBP 40,000 / person (includes transport, visit, tastings and insurance)  
LBP 35,000 / person for groups of 5 or more

<http://www.lebtivity.com/event/wine-tour-in-bekaa-valley-with-dale-corazon>

### TRIPOLI & AL MINA: ARTISANS, CRAFTS AND CUISINE



**JANUARY 22, 2017**  
8:00 a.m. - 6:00 p.m.

*Tripoli, North Lebanon*

Discover traditional crafts from Tripoli including handmade soaps and blown glass. Plus taste unique food specialties like kaak, moghrabieh, samke harra and, of course, oriental sweets.

**FEES:**  
LBP 120,000 / person (includes transportation, guide, breakfast and lunch)  
LBP 110,000 (students), LBP 55,000 (children under 12 ) free for children under 5

<http://www.lebtivity.com/event/tripoli-al-mina-artisans-crafts-cuisine>

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## GET IN TOUCH, GET INVOLVED

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Editor in chief: Alexis Baghdadi

L.E.T.S. Lebanon is published by  
**SOILS Permaculture Association Lebanon**

 [www.soils-permaculture-lebanon.com](http://www.soils-permaculture-lebanon.com)

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Cover photo by Adel Nehmeh

## A THOUGHT TO SHARE ...

**“We just have to really, really, really dust ourselves off and do our work. That’s all there is to it - love each other, do your work.”**



**–Elizabeth Alexander**

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