L.E.T.S. Lebanon

Issue 42, February-June 2017

• Creativity • Collaboration • Continuity • Community

IN THIS ISSUE:

LETTER FROM THE EDITORS

ATTENDING TO ZONE ZERO... FINALLY

Hello again, Friends.

Back in January, we had to make the difficult decision to put our newsletter on hold while we ensured all our ongoing projects continued on the right track and kicked off new ones.

More importantly, it was time for us to look after **Zone Zero**. In Permaculture, Zone Zero is defined as a dwelling, a base from which we start designing new zones based on our needs and frequency of intervention. Since we founded SOILS in 2014, we have been so busy reaching out to farmers and permaculture enthusiasts across Lebanon and beyond that we had neglected our Zone Zero. This year, our team grew to **9 members** who could finally begin to shoulder some of the many duties and responsibilities that only a few of us previously held.

For 2 of our founding members, Zone Zero was a long overdue marriage and at last a place to call their own and share as partners. On **May 29**, **2017**, in the little town of **Aradippou** in **Larnaca**, **Cyprus**, *Rita Khawand* and *Alexis Baghdadi* finally found the time to say Yes to a life together in an intimate ceremony. Cyprus was not only a beautiful honeymoon destination, but also a very close neighboring country with a similar climate to Lebanon's and a growing community of like-minded permaculture enthusiasts, new friends, and potential collaborators. We will be sharing our experiences in Cyprus with you in this issue and the coming ones.

For *Bassam* and *Silvana Khawand*, the first 5 months of 2017 were also dedicated to Zone Zero. As their daughter *Joud* turned 1 in April, their house continues to grow with love. Bassam also began applying new beekeeping knowledge gained through SOILS' partnerships to his hives. You can read about his experience and ongoing professional growth in this issue as we share updates from our project **AFIR Beekeeping and Nature Discovery Center**.

Ghassan Salman focused on completing his internship at the **American University of Beirut farm** in the Bekaa as part of his second undergraduate diploma in agriculture. At the same time, he has been reviewing his experience with our first pilot project for a school learning garden last year to improve his approach. Together with our new member *Karim Hakim*, they are very close to having an outstanding program for the coming year. We already have several schools and a university interested in partnering with us for learning gardens and courses in sustainable agriculture. Ghassan is also considering how to dedicate more time to his orchard in **Adloun**, **South Lebanon**.

The rest of our team, *Amani Dagher* and newcomers *Angela Hayek* and *Salim Kattar*, are also working on their Zone Zero and are eager to participate in our new projects.

For now, it's good to be back, and we hope you enjoy this new issue of L.E.T.S. Lebanon.

Shared by the Editorial Team

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LET'S FOCUS

UPDATE FROM AFIR BEEKEEPING AND NATURE DISCOVERY CENTER

So many things happened within our AFIR Beekeeping and Nature Discovery Center project since the last issue of L.E.T.S. Lebanon in January that we would need 2 full newsletter issues to tell you all about them. Instead, we'll present you with some of the highlights.

BEEKEEPING APPRENTICESHIP PROGRAM

In February, we kicked off our 12-month **Beekeeping Apprenticeship Program**. We initially planned to have only 1 group of trainees but we had so many candidates that we ended up with 2 groups of 8 trainees each, grouped according to their level of knowledge (some already owned hives and others were totally new to beekeeping). We conducted 4 monthly sessions so far, covering subjects such as wintering evaluation, swarming, and preparation for honey harvesting. The sessions were mainly conducted by our own *Bassam Khawand* from SOILS, except for one by our partner from **APIFLORDEV** (France) *Paul Bonaffé* during his third visit to Lebanon.

BEEKEEPING KNOWLEDGE FOR AFIR

In addition to working with the apprentices, Paul visited some of the **beekeepers** in the Jezzine region and gave Bassam some ideas for AFIR's apiary which now includes **11 hives**. Paul was particularly happy to see that Bassam started using the beeswax processing material brought in by APIFLORDEV last year, and that he benefited from the winter months to make new sheets using clean beeswax from his hives. This will help us control the quality of the wax and reduce the chances of disease. So far the bees look very happy with their new locally made frames.

BEEKEEPING INTRODUCTORY WORKSHOPS

We also organized two beekeeping introductory workshops in May, one of them was addressed to a group of 6 artists participating in a **contemporary arts residency** in Jezzine, which was organized by **BeMa**, **APPEAL**, and **T.A.P.** (Temporary Art Platform). The artists had the chance to discover the world of bees and its relation to water - the theme of their residency.

WILD POLLINATORS IDENTIFICATION

In addition to honeybees, we started working on the collection and identification of **wild bees**. We hosted our friend *Mira Boustany*, a Lebanese University doctoral student, to give us an introductory workshop on the families of wild bees and the basics of collecting specimens. Although the collection and pinning process is a bit cruel, it's indispensable for mapping species which will allow us to raise awareness about wild pollinators and help protect them.

AFIR'S AROMATIC PLANTS GARDEN

As for our aromatic garden which we planted last autumn with **4,000 lavender and rosemary seedlings**, we faced new challenges with the end of winter. Most of the seedlings survived the winter well. But as soon as the weather started to warm starting end-February, the weeds started to grow and quickly overwhelm the young plants. We should have removed them as soon as they pointed their noses, but we were eager to see what would grow naturally there so we decided to observe before intervening. One of the dominant early "weeds" was *Calendula arvensis*, which the honey bees loved but it was growing too fast. Finally we decided to hand weed after a mild rain while we were researching and testing different mulching methods to prevent further weed growth.

We wanted a mulch material that is locally available, affordable, and bio-degradable. We tried cardboard, newspaper, and linen fabric, all topped with pebbles from the land. Cardboard and newspaper worked well, as for the linen strip it was blown by the wind and we thought that with time new shoots would pass through it like landscape fabric. For cardboard we wanted something practical and easy to install around the existing plants so we went for recycled non-bleached carton rolls used usually to protect the floor from paint or rubble, and easily found in tool shops. The rolls were 120 cm wide and 200 cm long, we cut each in 3 strips 40 cm wide. As for newspapers, we bought 1 kg of old newspaper because we couldn't find enough free ones, and removed the colored papers. We tried to know if in Lebanon toxic black ink is used but with the lack of information we decided to use it anyway since it can be replicated easily by other people. Topping the weed suppressing material with stones didn't seem enough so we bought wood chips (mainly from olive and carob trees), from a nearby village to add on top and retain humidity. If the chips are not mixed with soil, they don't cause loss of nitrogen.

Before starting the mulch process, we had to clear the ground and plough for one last time. However the distance between the rows was 110 cm, which is not enough for an ordinary rototiller. Luckily, our friend *Michel Atwi* from **Maghdouche** lent us a small rototiller that did the job. We initially hired locals for the mulching: They cut holes in the cardboard strips to be able to rapidly insert them around the seedlings, then wet them so they lay flat on the ground and topped them with stones and wood chips. As the work was slow we called on volunteers during the last weekend of March and, thankfully, many friends came and helped us finish a big part of one terrace. All through the mulching phase the villagers passing by would stop amazed at what we're doing, ask us questions and laugh, I'm sure they thought we were crazy, even if we tried to explain the benefits of mulching in suppressing weeds and retaining moisture.

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LET'S FOCUS

Continued from Page 2

In an attempt to suppress future weeds between the rows and enrich the soil, we had bought some cover crop seeds of locally-growing species, and we did a trial with white clover. It never germinated, maybe because it was too dry. However in April we were happy to notice local clovers emerging on their own. We also noticed a lot of ladybug pupas on the plants.

We had to bring in an additional batch of wood chips for another terrace, but this time was different. After we applied some of the chips, the rest lay in the land in plastic bags. At the beginning of May, the neighbors told us of a bug infestation coming out of the wood chips bags. We directly moved the bags to a remote location and we contacted the person who sold them to us, but he didn't see the bug on his land. After a lot of research we identified it as *Spilostethus pandurus*, a native bug that is not usually considered a pest, but the rate of the infestation was too high and annoying for the neighbors. The municipality finally decided to use a mixture of pesticides to sprays the houses, leaving out the land and crops where the infestation was lower. The bugs disappeared the next day. Main lesson learned: we should not bring in material when we're not sure of the source, especially things like wood which could harbor a variety of pest eggs. We will try in the future to get a wood chipper and chop trimmings from local olive trees.

Straight after the bug issue we were faced with a new challenge. During a check-up visit we noticed some brown spots and the withering of lower leaves in around 30% of the lavender plants. We identified this as septoria leaf spot, a fungus whose spores can spread with the wind and through contact. We couldn't tell how the infestation reached the plants, especially that there is no prior lavender plantation in the village, and the soil drainage is very good so there was no standing water. We thought that maybe the mulch caused it since the stems of the plants were touching the cardboard as they grew, but some of the non mulched plants were infected as well. We sprayed the plants with liquid sulfur to prevent the infestation from spreading, and we are working on making more space between the cardboard and the stems to improve aeration. A month later the lavender is blooming, bumblebees and honeybees are buzzing around by the hundreds, and the infestation seemed to be under control; fingers crossed.

Although the mulch is working well in suppressing weeds compared to non mulched rows, crawling weeds that might have got in with the intensive ploughing from previous tobacco plantations can crawl from in between the rows and suffocate the young plants, so we had to do a third and laborious round of hand weeding in June, after which we started the summer drip irrigation (around 4 liters per plant for 30-40 minutes once a week).

We were glad to receive visits from donors throughout the season. *Jo* from **SLush** visited us in April, and 2 representatives from the **Provence-Alpes-Côte-d'Azur (PACA)** region came in June. All of them loved Saidoun and appreciated the development of the project.

Shared by Rita Khawand

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LET'S SHARE OUR NEWS

FROM CYPRUS: A VISIT TO THE KATO DRYS BEE AND EMBROIDERY MUSEUM

At **Larnaca** airport, we grabbed a couple of leaflets from the tourism office in case our Lonely Planet guide had left something out. Sure enough, we found out about the **Kato Drys Bee and Embroidery Museum** (https://www.facebook.com/KatoDrysBeeEmbroideryMuseum/). Even though we'd need a 40-minute taxi drive from Larnaca to get there, we couldn't possibly miss the opportunity to visit it.

2 days later, we had made it there. After crossing a blooming garden buzzing with bees, we were greeted by the lovely *Ellie Kornioti* who lives on site with her husband in a renovated 300-year-old house classified traditional. The upper floor featured dozens of antique **lacework** items, a traditional handicraft in many Cypriot villages, some of which used to take over 3 months to be completed. We had the chance to discover some of these villages and their work later during our 1-week stay. The lower floor had one room dedicated to traditional Cypriot foods like **halloumi** white sheep's cheese and **zivania**, a strong grape liquor. Another room had a good collection of old agriculture tools used in villages. As for the third room, it had 2 traditional cylindrical beehives made of ceramic or mud, in addition to other beekeeping tools and pictures of wild flora which honeybees forage. Elli and her husband are actually beekeepers themselves and they like to share their knowledge with visitors., so we felt right at home with them. We concluded the visit with a nice talk about beekeeping over a tasting of honey and zivania. At this point we noticed a swallow's bird nest in the entrance's low ceiling with a piece of cardboard Elli had hung under to keep the birds' young from falling. There were originally 2 swallow pairs but one bird was eaten by a cat and now the 3 birds have allied to raise their young.

The museum also includes a charming 2-bedroom house next to Elli and her husband's, which they rent out to visitors. This is definitely an attractive option for our next trip there.

Shared by the Editorial Team

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LET'S SHARE OUR NEWS

FROM CYPRUS: INSIDE THE LARNACA SALT LAKE'S UNIQUE ECOSYSTEM

During our trip to **Cyprus**, we had the chance to discover the **Larnaca Salt Lake**, a distinctive land feature the likes of which we do not have in Lebanon, as well as its incredibly adapted ecosystem. Located just outside the Larnaca airport, the lake covers a total surface of up to 2.2 km^2, making it Cyprus's second largest salt lake (behind Limassol Salt Lake), and is considered one of the island's most important wetlands. Fauna, flora, goods, and culture from three continents (Asia, Europe, and Africa) have come to Cyprus and this place, fashioning its unique character. Larnaca Salt Lake has been declared a **Ramsar site**, a **Natura 2000 site**, a **Special Protected Area** under the **Barcelona Convention**, and an **Important Bird Area (IBA)**.

Larnaca Salt Lake was originally a small gulf near the ancient city-kingdom of Kition (today, Larnaca), which saw Mycenaean, Greek, and Phoenician settlements as early as **1300 BC**. Increased erosion from the surrounding area created dense deposits of sediments and around **1000 B.C.** waves shifted these sediments to block the bay, creating the original lake. Its high salt content results from seawater that penetrates the porous rock between the lake and the sea. In summer, the water evaporates, leaving a crust of salt on its floor. Semi-natural salinas around the lake allowed the people of Cyprus to harvest salt, one of the island's major exports until the 1990s. Salt was a highly prized product, not only for cooking, but also for preserving food. In **1500**, Venetians diverted nearby streams away from the lake to increase salt production, giving the Larnaca Salt Lake its current shape.

During our visit at end May, the bottom of the salt lake was largely shallow and level, with its dry sandy shores rising in a barely visible slope. Near the water, a layer of hardened salt covers the sand and stretches on across the whole area of the lake. Small stones emerging above the water also appear capped with salt deposits we found to be up to **7 cm thick**. A little further in, a thin film of water begins to cover the salt crust without dissolving it. Walking barefoot on this lunar landscape is an eerie and strangely therapeutic experience, and we made it quite some distance towards the lake's center with the water barely rising above our toes.

The salty soil does not allow for much plant growth and very few specialized plants called **halophytes** (which make up only about 2% of all plant species) can tolerate this salinity. Halophytes actually store salt in their roots and leaves. This allows them to draw more water which moves to their cell walls through osmosis. Some of the halophytes we were able to photograph and identify include the **dwarf saltwort** or **glasswort (*Salicornia bigelovii*) and the shrubby seablite** (***Suaeda vera***). For a list of halophytes and salt-tolerant plants, check out http://www.biosalinity.org/salt-tolerant_plants.htm

But the most interesting aspect of the salt lake is its specialized food chain. At the bottom of the chain, we find ***Dunaliella salina***, a **microscopic halophyle algae** able to survive in high-salinity environments. This single-cell organism produces large amounts of carotenoids that give it a brick-red color (although this is only visible in large colonies of the algae). On this algae feed tiny aquatic crustaceans known as **brine shrimps** (***Artemia salina***) which are uniquely adapted to salt lakes. ***Branchinella spinosa***, the **fairy shrimp**, is another species of shrimp that lives in smaller, less saline water bodies at the edge of the main lake. We had the chance to observe *Artemia salina* up close as we walked on the water. This incredibly resilient organism barely changed over 100 million years; it has 3 eyes and 11 pairs of legs, growing to a maximum size of 15 mm. When water levels are high, females lay thin-shelled eggs that hatch immediately. In summer when water and food are scarce and salt concentrations are high, they lay hard-shelled eggs (cysts) that can remain dormant for many years until water levels rise and the salinity drops. When low rainfall causes the brine shrimp population to shrink, the *Dunaliella salina* algae will multiply, coloring the lake red. When the brine shrimp population is large, **flamingos** (***Phoenicopterus rubber***) stop at the lake during their winter migration to feed on these shrimps and breed – if not, the birds will continue their journey to **Limassol Salt Lake** or Africa. The flamingos actually get their pink color from feeding on the brine shrimp; they walk with their head down and beak half open, pumping in water with their tongue and trapping the shrimp with hair-like filters. Other migratory birds that overwinter here and which we also couldn't observe include duck species like the **shelduck** (*Tadorna tadorna*), the **teal** (*Anas crecca*), and the **shoveler** (*Anas clypeata*), alongside other migratory birds. Species that nest here include the Kentish **plover** (*Charadrius alexandrinus*), the **spur-winged lapwing** (*Vanellus spinosus*), the **stone curlew** (*Burhinus oedicnemus*), and the **black-winged stilt** (*Himantopus himantopus*). All we were able to see this late in spring was a **lesser kestrel** hovering above us the whole time.

Despite being surrounded by roads and an international airport, Larnaca Salt Lake is in an almost pristine condition. The few visitors we encountered were extremely respectful of the place. A walkway goes around the entire lake and constitutes a perfect circuit for birdwatchers to follow. We managed to get all the information we needed about the location's history and nature from bilingual panels installed there.

This is definitely a place we want to visit again, perhaps during the flamingos' migration, and we highly recommend it for nature lovers.

Shared by the Editorial Team

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LET'S SHARE OUR NEWS

APPLY FOR THE SWITCHMED GREEN ENTREPRENEURS TRAINING PROGRAMME NOW

Our friend Maya Karkour has been conducting very interesting training programmes along with Antoine Karam, for green entrepreneurs to help them develop their green ideas into sustainable businesses. So we asked her to tell us more about it as the new call for application will be closed on July 10!

Lebanese SwitchMed trainers Maya Karkour and Antoine Karam

Do you have a green business idea but don't know where to start? Would you like to choose alternative ways to do business? Would you like to convert challenges into green business opportunities? Would you like to get inspired by other successful eco-entrepreneurs?

If so, we strongly encourage you to apply right away to the next round of workshops of the **SwitchMed Green Entrepreneurs Training Programme**! By joining the training, you will learn how to convert step-by-step your green business ideas into a sound and feasible green business project.

This free-of-charge training will be delivered two more times in 2017, in series of 5 workshops each, as follows:

Summer/Fall Training:
Wednesday August 2, 4:00 p.m.
Wednesday August 16, 4:00 p.m.
Wednesday August 30, 4:00 p.m.
Wednesday September 27, 4:00 p.m.
Wednesday October 11, 4:00 p.m.

Fall Training:
Wednesday October 4, 4:00 p.m.
Wednesday October 18, 4:00 p.m.
Tuesday October 31, 4:00 p.m.
Tuesday November 21, 4:00 p.m.
Wednesday December 13, 4:00 p.m.

Each workshop will last 4-5 hours, including a coffee and healthy snacks break.

The workshops will be held at the **Ministry of Environment** building in downtown Beirut (Lazarieh Center, 7th floor – room 7-48).

The goal of the SwitchMed Green Entrepreneurs Training Programme is to assist eco-entrepreneurs in launching or growing new businesses in a practical way. You will be able to:

-Gain preliminary knowledge and tools to turn your innovative idea into a green business model
-Turn environmental challenges into business opportunities
-Gain some expertise in eco-design and improving businesses' environmental performance
-Design an economically sound business model that creates environmental and social value
-Develop on the long run a green business plan to guide your entrepreneurial journey

More information about this programme is available at: https://www.switchmed.eu/en/corners/start-up

Kindly note that a *minimum commitment and attendance of 4 out of the 5 sessions* is necessary in order to be eligible to the next stage which comprises individual eco-entrepreneurship coaching sessions and eligibility to participate in the SwitchMed competition.

For any queries, please contact one of the SwitchMed Green Entrepreneurs Local Trainers:

Antoine Karam (antoine.karam@proquale.com; 03-928 889)
Maya Karkour (maya@ecoconsulting.net; 03-120 642)

The deadline to apply for the Summer/Fall Training is July 10, 2017

Testimonial from *Nour Kays*, a previous participant:

"In 2015, a friend sent me an email with a call for Green Entrepreneurs from SwitchMed, a program funded by the EU for young environmentally conscious entrepreneurs in the MENA region to develop their businesses. At that time, I had been running my brand as a hobby for two years; NK by Nour Kays is a line of conscious fashion accessories made from repurposed plastic bags in Beirut (Facebook page: https://www.facebook.com/NKbyNourKays, Instagram account: https://www.instagram.com/nourkays/). I applied and was among the 20 entrepreneurs to get accepted into the program in Lebanon. Some of those entrepreneurs had ideas, while others like me had concrete projects. The aim of this first phase was to develop a Green Business Canvas at the end of the training. Two projects, including mine, were chosen to continue to the next phase.

In the second phase, we were mentored one-on-one and developed a financial plan for our business as well as a 1-minute video pitch to sell our idea to judges from SwitchMed. After that, I got invited to Barcelona to give a Pecha Kucha talk with other entrepreneurs that were undertaking the same program in different Mediterranean countries. A couple of months later, I got selected for the third phase where 40 out of 1,700 participants in the program received continued mentorship. At this point, we had to develop a green business plan and look for technical experts who would help us develop our business further. I chose to work with a fashion designer, a strategist, and a web developer. SwitchMed supported the experts, by allowing us to experiment with materials, diversify our products, market them better, and have a platform with all the information about my brand, which is still under process.

This journey encouraged me to develop my brand by having deadlines, guidance, and opportunities to meet people and discuss my work."

ATTENTION: Each training is limited to 20 participants!

Fill the application form at the earliest: http://switchmedentrepreneurs.eu/en/

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LET'S SHARE OUR NEWS

EXPERIENCE THE "LES RACINES DU CIEL" ENVIRONMENTAL FARM IN LASSA

Our farm, **"Les Racines du Ciel,"** (the roots of heaven) is located on a cliff side in the **Nahr Ibrahim** valley above the city of **Jbeil**.

The principal charm of the village of **Lassa**, where *Raed's* father was born, is the grandiose landscape in which it is situated. The land belongs to Raed's father who bought them some 30 years ago and built terraces in them to plant apple trees. He also built two houses which in summer welcome the whole family looking for a bit of fresh air and tranquility.

Since early days, the Chami family had been working the land until 2012 when Raed decided to take over after we spent over a year traveling the world as far as India.

To acquire the necessary experience, Raed spent several months in France learning the basics of food growing and beekeeping from a small farmer who dabbled in **biodynamic agriculture**. In 2013, he returned to Lebanon and started observing the work in his family's land. Finally, in 2015, he decided to convert the orchard to organic agriculture. I rejoined him in the spring of that year after I had completed my degree in architecture.

New agricultural and commercial practices:
Today, the conversion is underway: the trees are slowly adapting to this rhythm and after a difficult first season, the current one has improved. We have now entered our first season without any chemical treatment or fertilizer. Nature is reclaiming its rights, insects, birds, and local plant species are coming back. We started off with an apple-only orchard but we are engaged in a crop diversification process. Little by little we are replacing dead apple trees with other fruit trees (cherry, apricot, etc.) planting berries (strawberries, raspberries, currants) and growing vegetables between the trees.

Every Saturday we sell our produce at the **Souk El Tayeb** farmer's market in Beirut. This gives us the opportunity to meet the people who buy our products and explain our project to them. We are also exploring other pickup locations in Beirut to deliver customer orders on other days of the week, without resorting to intermediaries and while still being able to meet our customers.

But selling apples is a difficult enterprise for us as well as for other growers in the valley and other parts of Lebanon. The country's entire agricultural sector is reeling from inadequate exporting arrangements.

To make up for our losses from apple sales, as well as to achieve our crop diversification objectives, Raed grows vegetables organically and even introduces biodynamic concepts (such as applying green manures and following a specialized planting calendar) and permaculture (companion planting, on-site composting, minimal irrigation). The idea is to create a natural balance between the trees and the other crops so as to achieve the maximum output with the minimum input.

Sharing experiments and experiences
Every day we try to find more ways to make the most use of the crops and materials available on the land to meet our needs. The kitchen is a particularly active place for us to experiment with product transformation (distilling floral waters and spirits, canning or drying fruits and vegetables, etc.). We have also organized natural construction workshops to reintroduce people to forgotten building materials such as cob or sheep's wool.

Our project also aims to demonstrate that it is possible to live content in the countryside around the year while having a minimal impact on the environment. For this purpose, we welcome volunteers from Lebanon and other parts of the world for short or long stays at our farm so they can help out and share our way of life.

These visits bring us a wealth of knowledge and infuse more life into our home. For these reasons, we plan on multiplying and diversifying them, for example with art or yoga retreats and additional workshops.

If you have ideas, please don't hesitate to reach out to us.!

To stay up-to-date with our activities, you can ask to subscribe to our newsletter by emailing us.

And if you feel like dropping by for a short visit, *ahlan wa sahlan*, just call us to arrange it!

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http://les-racines-du-ciel.blogspot.com/p/blog-page.html

Shared by Joanna Parker

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LET'S SHARE OUR NEWS

AN EASY GUIDE TO UNDERSTANDING POLLINATION

Following *Mira Boustany's* workshop on **wild pollinators** in **Saidoun** on **Sunday March 19, 2017**, I had a lot of questions about the process of pollination. I thought of writing down some of Mira's answers and adding the results of a little research I did on the internet.

As I see it, the key elements in pollination include the pollen itself, the stamen and pistil of flowers, the different types of flowers, the different types of pollination ,and finally the advantages of self and cross pollination. Here they are, in a (hopefully) easily understandable format:

- **Pollen:**

This is the fine powder-like material whose individual grains contain the male reproductive cells of seed plants.

- **Stamen and pistil:**

The stamen is the male organ in a flower. It usually consists of two parts: the filament and the anther (that contains pollen). The pistil is the female organ in a flower. It consists of three parts: the stigma, the style, and the ovary. which contains one or many ovules. When fertilized, the ovary turns into a fruit or a vegetable and the ovules into seeds.

- **Different types of flowers:**

There are two main types of flowers: **unisexual** (or diclinous) and **hermaphrodite** (or monoclinous). Unisexual flowers can be either male, or female. Some plants like cannabis or kiwi exclusively have one single sex. They are called dioecious plants. Other plants can bear both male flowers and female flowers like avocado, nut-bearing trees, cedars, and cucumber (see Figure 2). They are called monoecious plants. Hermaphrodite flowers (see Figure 1) contain both male and female organs in the same flowers. Most flowers are hermaphrodites e.g. apples, tomatoes, grapes, strawberries, lavender, etc.

Figure 1: Cucumber unisexual flower (male, left; female, right)
http://horticulture.tekura.school.nz/

- **Pollination:**

It is the process that fertilizes flowers (non-flowering plants like ferns, moss, and liverworts reproduce by other forms of sexual reproduction) and then transforms them into a fruit or a vegetable and therefore allows the production of grain that will lead to the reproduction of the plant. Pollination happens when pollen from the male organ is transferred to the female organ. In other words, Pollination is to plants what sexual intercourse is to animals. Needless to insist on how fundamental it is to nature's reproductive process and to our food supply.

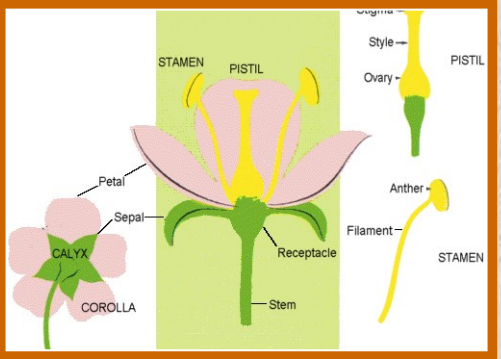

Figure 2: Apple hermaphrodite flower
https://www.quora.com/What-is-the-name-for-the-fuzzy-part-on-the-bottom-of-an-apple

- **Different types of pollination:**

There are two main types of pollination: **self pollination** and **cross pollination**.

Self pollination comes in 2 forms. The first is called autogamy (see Figure 3) and takes place among some hermaphrodite flowers, when the pollen from one flower pollinates and fertilizes the stigma of the same flower. Although the flower usually can benefit from pollination from other flowers it does not fundamentally need the intervention of external factors like pollinators to reproduce e.g. Orchids, peas, sunflowers as well as some others. The second is called geitonogamy and occurs when the pollen from one flower pollinates other flowers of the same individual, e.g. corn or cucumbers. These flowers usually need the intervention of external factors like pollinators.

Cross pollination is also known as allogamy. Most flowering plants use cross Pollination. It is when pollen grains are transferred to a flower from a different plant. Cross pollination fundamentally needs the intervention of and external element like insects such as a bee. The pollinator enters the plant to drink nectar and picks up pollen grains while it's there. When the pollinator moves to the next flower, these grains are transferred to the pistil and the flower is fertilized. Wind can sometimes also help cross pollinate. Some cross pollinated plants are apples, grapes, beans, strawberries, pumpkins, maple trees etc.

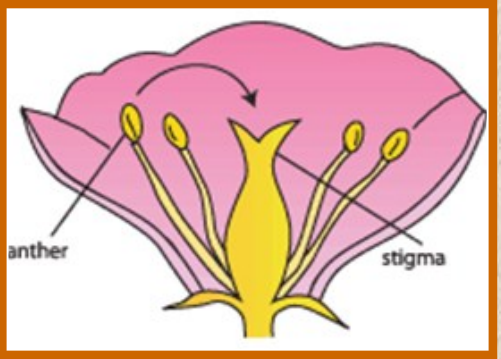

Figure 3: Autogamy
http://horticulture.tekura.school.nz/

- **Advantages of cross pollination and self pollination:**

Many self pollinating plants, usually depending on the existence of pollinators that will travel from plant to plant, have developed strategies that favor pollination from outside. Both mechanisms present advantages and disadvantages
Advantages of cross pollination
Cross pollination is advantageous because it allows for diversity in the species, the introduction of new characters, the elimination of undesirable ones and helps increase resistance to diseases as the genetic information of different plants are combined.

Advantages of self pollination
Self pollinating plants need less energy to produce attractants for pollinators and can spread beyond areas where suitable pollinators can be found such as high elevations. Also self pollination helps maintain the purity of the plant's race.

Shared by Karim Hakim

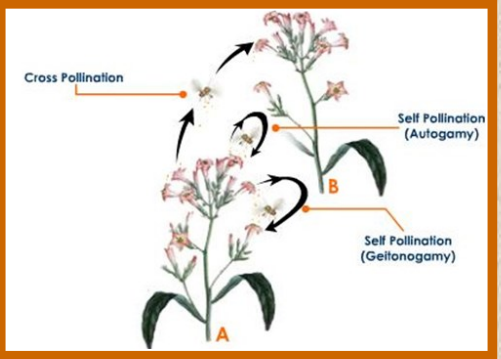

Figure 4: Types of pollination
http://biology.tutorvista.com/plant-kingdom/types-of-pollination.html#self-pollination%C2%A0

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LET'S SHARE OUR NEWS

LEBANON'S SECOND ANNUAL SEED EXCHANGE ORGANIZED BY SOILS

Following the success of Lebanon's first **Annual Seed Exchange** which we organized last year, we were contacted by **Cantina Sociale**, a new concept restaurant in **Ashrafieh**, **Beirut** and asked to host our second event at their premises this year on **April 1**, **2017**

Only 2 days after we met with the restaurant's event manager, we were contacted by the **Beirut Art Center** who had hosted our event the previous year and were eager to repeat the experience. Eventually, we had to apologize as we had already committed to Cantina Sociale. Additionally, it is part of our strategy to keep targeting new venues so we can reach the maximum number and most diverse types of people.

Evidently, word had gotten around that our first event was a huge success because the number of attendees **more than doubled** this year and we stayed on for **over 4 hours** instead of the 2 hours we had planned.

We were very lucky to have many of our friends present with us for the event. Notably, we enjoyed the valued participation of *Nadim Samen*, co-founder of the **Samen Eco Gardens**, *Khaled Sleem* joined us to share some germinated laurel and cedar seeds from his own nursery. *Remy Petit* was there to talk about his interesting work growing mushrooms. We invited the French NGO **Graines et Cinema** to participate with us and showcase the products of their newly established **seed bank** in **Taanayel**, **Bekaa**. *Zeina Daou*, organic farmer and founder of **"Le Potager Bio"** farm in **Ammiq**, **Bekaa** also showed up and was happy for the opportunity to make contact with Graines et Cinema and order seeds for her farm.

Shared by the Editorial Team

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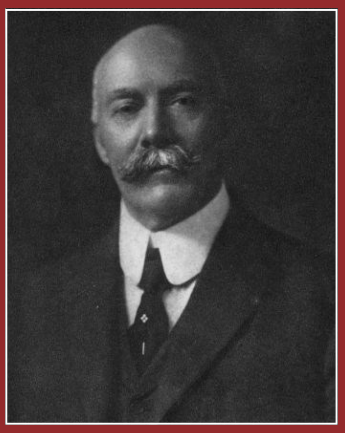
A THOUGHT TO SHARE ...

"Forests, lakes, and rivers, clouds and winds, stars and flowers, stupendous glaciers and crystal snowflakes - every form of animate or inanimate existence, leaves its impress upon the soul of man."



–Orison Swett Marden (1848-1924)

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