

INTERVIEW

with Dr. Rami Arafeh from the Palestine-Korea Biotechnology Center at the Palestine Polytechnic University, Hebron/Palestine, about the workshop on wastewater treatment by Algal Turf Scrubber (ATS) that was organized at Bethlehem University in the framework of the Palestinian-German Science Bridge (PGSB) Project

„A VERY INTERESTING AND USEFUL EXPERIENCE!”



You helped to organize the workshop from the Palestinian side. How did the idea for the workshop arise?

Dr. Rami Arafeh: We came up with the idea during my visit to Forschungszentrum Jülich last summer. Colleagues from the Institute of Bio and Geosciences and myself considered how the algae research in Jülich could be transferred to an applied project. After that, we first built a replica system at my home university, the Palestine Polytechnic University (PPU), and then again on a medium scale at the Palestine Museum of Natural History at Bethlehem University. The PPU and Bethlehem University have a joint Master program in biotechnology, which helps to facilitate this work.

What did you think of the workshop?

Dr. Rami Arafah: It was a very interesting and useful experience especially to see real interactions between Palestinian students and the colleagues from Jülich. The exchange of ideas was very lively and constructive. This kind of teaching is not so common in our culture, and it is necessary to introduce it. Most educational institutes and universities here focus on theoretical teaching, but in this workshop the students first learned the theory behind the technology, then they were exposed to the practical part in the garden and got to experience the application of the setup. We usually don't have the opportunity to show our students applied research activities due to a lack of infrastructure. We don't have labs or instruments. We show videos sometimes instead.

How will the application of this technology be continued after the workshop?

Dr. Rami Arafah: We were very glad that our colleagues from the faculty for engineering also participated in the workshop. They had many good suggestions, for example using robots to harvest the algae, and also new ideas, for example how we could use the technology to produce distilled water as an additional product. This is water from which all traces of lime have been removed, which is needed in industry, for example for use in car batteries. The next step will be to build a large scale system at a dairy farm near Hebron. A lot of sewage is produced here. There are greenhouses near the farm where the algae can be utilized as biofertilizer. The farm is a very suitable location for this setup because of the availability of ATS system requirements.

Are your students also involved in this project?

Dr. Rami Arafah: During the workshop, we asked the students to work on suggestions for the further development of the ATS system. Installing the system at the farm is part of their thesis work. As a next step, one or two students should go to the Forschungszentrum to do the practical part again. Before they visit, we would jointly determine the requirements for our situation in Hebron. Then, while at the research center, they should learn and study ways in which the technology can be further adjusted for the specific conditions here.

What are your long-term perspectives?

Dr. Rami Arafah: We want to spread the turf scrubbing technology as much as possible. Seeing our agriculture benefit from this technology would be the greatest reward for us. We hope to develop this technology to industrial and commercial scales. Our long-term goal is to be able to produce and export these setups ourselves.

What is the situation for students in Palestine? Do many high school graduates have the opportunity to study at a university?

Dr. Rami Arafeh: Approximately 90 percent of youth achieve at least a bachelor degree in our universities. A bachelor degree costs a student more than 8,000 Euro and that is usually paid for by the student himself or through financial support from his family. Some students also receive stipends from the private sector or in the form of an assistantship from the university. There is generally a big difference between female and male students in our universities. Male students frequently travel abroad to Asian or European countries, but women more often choose to study at a local university. Because of this, 80 percent of the students at the university are women. In some courses, I teach around 40 women and only one man, and once I had a lecture in which only women participated.

What are your next activities within the Palestinian-German Science Bridge?

Dr. Rami Arafeh: I am currently writing a proposal for a research cluster. One of the goals is to secure financing for research infrastructure. For example, the Institute of Bio and Geosciences at Forschungszentrum Jülich has an advanced sensing technology in the greenhouses and in algae research that might be useful in our projects.

How could the university system in Palestine be further supported?

Dr. Rami Arafeh: The staff and students exchange programs are excellent opportunities to raise the academic and research levels at Palestinian universities. Other exchange programs like the “Palestinian-Quebec Science Bridge” and the “Czech Republic Science Bridge” also offer good opportunities for academic and research exchange.

This interview was conducted by Kristin Mosch.



From left to right: Serina Al Massu, Dr. Silvia Schrey, Dr. Steven Calahan and Dr. Ladislav Nedbal working with the Algal Turf Scrubber in the garden of the Palestine Museum of Natural History



The Algal Turf Scrubber