First, I would like to take this opportunity to wish everyone a Happy New Year, with the hope that it is a year of health and prosperity. We already know that the upcoming year will be very challenging in many aspects, including from a research and academic point of view. Despite this, I hope that we remember to support our colleagues, because together, we can make the coming year productive on all levels.

We are in the middle of the process of recruiting two researchers and a technician. Recruiting new researchers is also an opportunity to create new research groups on relevant topics, develop innovative curricula, and improve collaborations with the various institutes and faculties at the university. I will need the cooperation of each of you in this important process.

The academic year will start soon, and unfortunately, it will take place on Zoom. I ask all lecturers to do everything in their power to make the academic material as accessible as possible to the students. I also ask the students to make an effort to participate as actively as possible in the courses. I have no doubt that the learning experience is not ideal, compared to a regular classroom, but since the pandemic will be with us for a while longer, we will have to cope with the situation at hand as best we can.

There are quite a few collaborations within the institute, and in fact, a solid bridge has been created connecting us with various research fields. In this way, our institute has become a unique place, where the whole is much larger than the sum of its parts. An excellent example of extensive multidisciplinary collaboration is the "Root of the Matter" program, which included seven researchers from various research areas of the institute. This project is in the fifth of its six years, so we must look for new opportunities to advance multidisciplinary research. It is clear that participation in research centers and consortiums places the institute at the forefront of agricultural and biotechnological research.

Please continue to seriously follow the guidelines regarding the pandemic. In addition, since we are working together while socially distancing, we should be twice as careful about work safety both in the laboratory and in the field.

All the best,

Naftali
Prof. Arnon Karnieli received his Ph.D. degree from the University of Arizona, Tucson, USA, in 1988. Since then, he has served as the Head of the Remote Sensing Laboratory, Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Sede Boqer Campus, Israel. His research centers on the processing of spaceborne, airborne, and ground remote sensing data of drylands, focusing on desertification and climate change processes. In this aspect, his research applications encompass dryland ecosystems and agriculture, and to a lesser extent, dust/aerosols and coastal water. In 2014, Prof. Karnieli was ranked among the top 20 researchers in the world in the field of remote sensing by the journal *Scientometrics*. He is the Israeli Principal Investigator of the recently launched Vegetation and Environmental New Micro Spacecraft (VENμS) mission. In his career, he has supervised many master’s degree students, 15 Ph.D. students, and several postdoctoral scholars. Prof. Karnieli has published more than 200 papers in peer-reviewed journals. His H index = 42 (ISI).

**New industry collaborations**

The Microalgal Biotechnology Laboratory (MBL) has recently signed a license agreement with the Israeli start-up Yemoja Ltd. The company utilizes a high-precision and controlled indoor photobioreactor technology, for the production of high-value microalgae with applications in the cosmetics, nutraceutical, and pharmaceutical industries. Across target microalgal-derived ingredients, this collaboration will develop technology for the production of the rare polyunsaturated fatty acid DGLA, from the MBL-patented mutant strain of the microalga *Lobosphaera incisa*. DGLA has recently emerged as an anti-inflammatory, anti-proliferative, and anti-atherogenic fatty acid.

**Drylands, Deserts and Desertification 2020 Conference, 16-18/11**

We are excited to announce that the **Drylands, Deserts and Desertification 2020 Conference** will take place this year as an [online event](#) from November 16–18. With the continued support of the UNCCD, BIDR, and AABGU, as well as that of a distinguished community of session chairs, we expect it to be an interesting and innovative event, just like in years past. Our program of 27 sessions and virtual tours can be viewed in detail on our website: [ddddconf.org](http://ddddconf.org).

Sessions have been scheduled in the afternoon and early evening hours to accommodate both Israeli and international time zones. There will be NO CHARGE for the event this year, but registration for the sessions will be required.

**FAAB session Conveners:**
- Viticulture and Vineyards – Aaron Falt
- Remote Sensing - Tools and Implications in Dryland – Arnon Karnieli
- Technology Transfer – Pedro Berliner
- Water flow in Soil and Plants – Naftali Lazarovitch

**Good luck to Prof. Rachmilevitch, the organizer of the conference!**

**Projects, Prizes and Fellowships**

**The MIDDLE EAST REGIONAL COOPERATION PROGRAM (MERC): Optimizing Prickly Pear Cultivation in the Middle East as a Source of a Valuable Natural Oil for Healthcare and Cosmetics**

Profs. Noemi Tel-Zur and Yaron Sitrit, FAAB,BIDR, BGU
Dr. Sireen Naoum, National Agricultural Research Center (NARC), Jordan

The oil extracted from the seeds of the prickly pear (*Opuntia ficus-indica*) contains high...
concentrations of vitamins and antioxidants, and commands high prices in the cosmetics and healthcare markets due to its purity and exceptional qualities. Our overall goal is to develop a prickly pear seed oil industry by selection of genotypes with a high seed content from the germplasm available in Israel and in Jordan and by developing improved crop management and oil production techniques.

The proposed synergistic collaboration combines unique skills in the fields of plant breeding, development and physiology, and water resources and irrigation research. The proposed project will pave the way for a better exploitation of regional genetic and environmental resources for sustainable agriculture, to produce oil on a commercial scale and to develop the foundations of an industry based on a promising crop that is highly adapted to extreme climate conditions. In addition, this project will contribute to the establishment of scientific and personal connections by transferring knowledge and elite plant material from BGU to NARC.

The project has been funded at $479,200, with $176,800 for BGU.

**BARD: US-Israel Agricultural Research and Development Fund**

**smaRt dEsalination System fOr sUstainable agRiCultural useE (RESOURCE)**

Prof. Naftali Lazarovitch (FAAB); Prof. Jack Gilron (ZIWR)
Dr Effi Trippler (Arava R&D)
Prof. Yoram Cohen (UCLA)

This project addresses the need to upgrade marginal groundwater resources for irrigation (reduction of sodium and chloride levels, while preserving divalent ion content), and the potential of flexible RO and monovalent selective electrodialysis to meet this need. In combination with blending, this process will maximize crop production per unit water abstraction from high salinity wells. Accomplishing the above requires a usable model for irrigation requirements as a function of crop, weather, and growth stage, which can drive the input for desalination and blending process control.

**This project will start in October 2020, and we are looking for excellent students.**

The project is funded at $310,000, with $155,000 for BGU.

**The Kessel Salinity Center for Agricultural Biology**

The center encourages research related to salinity in agriculture. Salinity is a major problem affecting water, soil, and crops all over the world. The Kessel Salinity Center for Agricultural Biology supports Ben-Gurion University students and post-docs conducting research related to these topics by offering competitive scholarships and travel grants.

This year, 10 students (five PhD and five MSc) received the scholarship (total of 4.5 scholarship portions to MSc students and 4 scholarship portions to PhD students).

**MSc students:** Alon Schlissel, Sharon Chemweno, Shuo Dong, Prashant Kakarla, and Robert Neufeld

**PhD students:** Avinash Sharma, Chao Song, Lingling Wen, Kaining Zou, and Zofia Maymon

**Vice President and Dean for Research and Development: Call for infrastructural research equipment**

Continuous physiological plant phenotyping in drylands:
Prof. Shimon Rachmilevitch and Prof. Naftali Lazarovitch

**Setting-up a BGU platform for the study of natural seed oil compounds for healthcare:**
Prof. Noemi Tel-Zur, Prof. Yaron Sitrit, Prof. Eli C. Lewis and Dr. Orli Grinstein-Cohen

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**Open Positions**

**Tenure-Track Position in Agrobiology**
Developing Pitaya Hybrids with Improved Tolerance to High Temperatures

Prof. Noemi Tel-Zur

BGU’s pitaya breeding program started with plants that produced different kinds of fruit. Some were large, beautiful and exotically colored but tasteless, while others were smaller and less attractive but had a wonderful flavor. This long-term breeding program uses classic breeding and selection strategies to develop improved hybrids, yielding beautiful fruits of excellent quality.

The program has already yielded new hybrids that are suitable for cultivation in the north and center of the country, but these hybrids cannot be grown successfully in the Negev Desert and Arava Valley, where the extreme temperatures during the summer months cause the plants to collapse. To this end, we undertook an extension of the long-term project, which involved a detailed screening of promising new hybrids under optimal temperatures (day/night temperatures of 25/20 °C) and under high heat stress (day/night temperatures of 45/35 °C).

Some results of this project were published in a recent manuscript that showed that there were significant differences between the parental lines and the new hybrids, and that the new elite hybrids did indeed offer excellent fruit quality along with good yields, under a range of temperature conditions. The new hybrids will increase the range of varieties available to the pitaya farmers in Israel who already enjoy profitable domestic and export markets and will enable farmers in the Negev and Arava to join this community of pitaya farmers, in the expectation of establishing profitable farming enterprises in their dryland areas.

Can plants be engineered to withstand drought?

Prof. Simon Barak of BGU’s Jacob Blaustein Institutes for Desert Research, discusses how BGU is making the Negev bloom with plants designed to thrive in an arid desert climate.

Combating Desertification and Drought - The Israeli Experience

Prof. Pedro Berliner, Alon Shlisser and Prof. Naftali Lazarovitch highlighting methods of preventing desertification and recovering from drought (UN World Day to Combat Desertification and Drought)
Editor: Yammit Itiel

See you next month