



Scientific Progress

Conventional wastewater treatment systems remove many, though not all, pollutants, leaving remnants of these substances in the environment. Biological monitoring methods are of great importance in detecting these substances and assessing their risk. The group of Prof. Shimshon Belkin (Department of Plant and Environmental Sciences at the Institute of Life Sciences) in cooperation with researchers from the Federal Institute of Hydrology in Germany, developed and recently published a method for detecting wastewater pollutants. The method consists of a series of cellular sensors for detecting two groups of environmental pollutants - substances that disrupt hormonal activity and those that damage the genetic material of the cell.

Prof. Ovadia Lev (Casali Center of Applied Chemistry) studies water and wastewater treatment, development of advanced materials for environmental and green chemistry, and the analytical chemistry and electrochemistry of trace organic contaminants. Prof. Lev has been instrumental in providing science-based regulations, tools for quantification of leakage from soil aquifer treatment systems to nearby drinking water wells, and quantification of wastewater leakage to water sources by quantification of emerging organic contaminants.

Community Impact

The Kidron river, which starts in Jerusalem and reaches the Dead Sea, crosses borders between Israel and Palestine and has been the biggest wastewater hazard in the area for decades. Thanks to cooperation between Palestinians and Israelis, led by Prof. Richard Laster (Faculty of Law) the Kidron Master Plan was created, promising to turn the valley from a water-scarce area to one with a supply of water for irrigation throughout the year, providing hope for future peace cooperation projects. This year, filtration system facilities were created through cooperation of authorities, experts and NGOs.

Prof. Efrat Morin (Fredy and Nadine Herrmann Institute of Earth Sciences) studies rainfall-runoff analysis, drought analysis, hydrological processes and models, and climate change impacts on different environmental systems. Prof. Morin is active on a number of national and international committees on the topic of hydrometeorology and regularly gives public talks on changes in regional precipitation regimes.

Studies and Learning Initiatives

As a result of the intensive exploitation of Israel's land and water sources, there have been serious environmental problems related to the contamination of soil, surface water, and groundwater. These and further problems are studied in the graduate degree programs in the Department of Soil and Water Sciences at the Robert H. Smith Faculty of Agriculture, Food and Environment. Tackling these problems requires in-depth study and special attention to all aspects related to the sustainable utilization of natural resources, including examining the possibilities of recycling waste originating from agriculture, the industrial sector, and urban settlement.

Hydrology and Water Resources is a joint program for the Faculties of Natural Sciences, Food Agriculture and Environment and Social Sciences. The courses provide students with tools for understanding processes related to the movement of water above and below ground surface, understanding water resources in Israel, and learning about irrigation and its environmental consequences.

The Social Involvement Unit at the Office of the Dean of Students bestowed an award of excellence for voluntary contribution to the community to Itai Katz, a third-year graduate student in International Relations, Geography, Environment, and Geoinformatics. Itai received the award for his volunteer-work with the organization "Ecopeace Middle-East," which brings together Jordanian, Palestinian, and Israeli environmental activists with the aim of developing cooperation in the fields of nature conservation. Emphasis is placed on water sources in the region, stemming from the realization that the water crisis in the Middle East knows no political borders.

Actions on Campus

To prevent water wastage, 400 economical showerheads were installed in student dormitory showers. The flow rate of the new head is 8.8 liters/minute and is much more economical than the old head, which released 23 liters of water/minute. At the same time, new ventilator heads were installed to maintain high pressure. In addition to saving water, changing the shower heads also saves on the amount of electricity needed to heat the water.

Throughout all HUJI campuses, smart irrigation is being used in order to minimize water consumption. Wherever possible, plants are strategically planted to create an environment requiring less irrigation.