



WORLD FOOD PRIZE LAUREATE  
**2012**

DR. DANIEL  
**HILLEL**



The 2012 World Food Prize will be awarded to **Dr. Daniel Hillel** for conceiving and implementing a radically new mode of bringing water to crops in arid and dry land regions - known as “micro-irrigation.”

Dr. Hillel’s pioneering scientific work in Israel revolutionized food production, first in the Middle East, and then in other regions around the world over the past five decades. His work laid the foundation for maximizing efficient water usage in agriculture, increasing crop yields, and minimizing environmental degradation.

First drawn to this critical need during his years of living in a small settlement in the highlands of the Negev Desert, the new approach Dr. Hillel developed provided for a low-volume, high-frequency, calibrated water supply to plants. As such, his research led to a dramatic shift from the prevailing method of irrigation used in the first half of the twentieth century: applying water in brief periodic episodes of flooding to saturate the soil, followed by longer periods of drying out the soil. The new innovative method developed and disseminated by Dr. Hillel applied water in small but continuous amounts directly to the plant roots, with dramatic results in plant production and water conservation.

## IMPACT

Dr. Hillel’s development and promotion of better land and water management clearly demonstrated that farmers no longer needed to depend on the soil’s ability to store water, as was the case when using the previous method of high volume, low frequency irrigation. The technology he advanced, including drip, trickle and continuous-feed irrigation, has improved the quality of life and livelihoods throughout the Middle East and around the world.

Dr. Hillel proved that plants grown in continuously moist soil, achieved through micro-irrigation, produced higher yields than plants grown under the old flooding or sprinkler irrigation methods. Using less water in agriculture per unit of land not only conserves a scarce resource in arid and semi-arid regions, but also results in significantly “more crop per drop,” with the successful cultivation of field crops and fruit trees -- even in coarse sands and gravel.

By integrating complex scientific principles, designing practical applications, and achieving wide outreach to farmers, communities, researchers, and agricultural policymakers in more than 30 countries, Daniel Hillel has impacted the lives of millions.

*Dr. Daniel Hillel* 

## CREATING SUSTAINABLE WATER MANAGEMENT FOR AGRICULTURE

Dr. Hillel's water management concepts—promoted by the U.N. Food and Agriculture Organization as HELPFUL (High-frequency, Efficient, Low-volume, Partial-area, Farm-unit, Low-cost)—have spread from Israel to the Middle East, Asia, Africa, Australia, and the Americas. HELPFUL irrigation technology is now used to produce high-yielding, nutritious food on more than six million hectares worldwide.

Dr. Hillel also helped devise a range of other adaptable, sustainable water management techniques for arid regions. Specifically, harvesting rainwater by inducing and collecting runoff from sloping ground can allow farmers to grow crops on previously barren lands.

His innovative approaches to enhancing infiltration and reducing evaporation through soil surface treatments have enhanced agricultural productivity. He has defined ways to control the leaching of solutes, the water-logging of root zones, and the erosion of topsoil by precisely determining the supply of water required with only small increments of percolation and drainage needed to prevent salt accumulation.



*Dr. Daniel Hillel* 

## EARLY LIFE & INSPIRATION

Daniel Hillel was born the youngest of five children in Los Angeles, California at the beginning of the Great Depression. His father died in 1931 when Daniel was one year old, and shortly thereafter his mother moved the family to live with her parents in Palestine, a part of which eventually became the State of Israel in 1948.

At the age of nine, Daniel was sent to live in the countryside on a kibbutz. His experience in this agrarian setting inspired his lifelong appreciation of the land and the need to protect its resources, leading him to pursue an academic and professional career in agriculture.

In 1946, Daniel returned to the United States to attend high school in Charleston, South Carolina, the former hometown of his maternal grandparents. He earned a Bachelor of Science degree in agronomy from the University of Georgia (1950), and a Master of Science degree in earth sciences from Rutgers University (1951). Later, he earned a Ph.D. in soil physics and ecology at Hebrew University of Jerusalem (1957), and did post-doctoral work at the University of California in soil physics and hydrology (1959-61).



*Dr. Daniel Hillel* 

## BRINGING LIFE TO ARID LANDS THROUGH AGRICULTURE

Daniel Hillel's first posting upon returning to the nascent state of Israel in 1951 was with the Israeli Ministry of Agriculture, where he took part in the first mapping of the country's soil and irrigation resources.

He soon left the Ministry to join a group of idealistic settlers dedicated to creating a viable agricultural community in the Negev Desert highlands by nurturing the region's meager but vital resources. In 1952, he took part in establishing the Negev settlement of Sde Boker. When the country's first Prime Minister, David Ben-Gurion, toured the area with his wife a year later, he was so impressed by that venture that he resigned from the government and became a member of Sde Boker. Ben-Gurion and Hillel became close friends as they worked together on the kibbutz. Recognizing the young scientist's exceptional capabilities, Ben Gurion sent him on goodwill missions to promote sustainable agricultural techniques in developing countries. In 1956, Hillel was sent to Burma on his first assignment to help develop the country's frontier.

In the following years—and into the present decade—Dr. Hillel participated in similar missions around the world, working for and with international agencies and organizations such as the World Bank, the U.N. Food and Agriculture Organization, and the U.S. Agency for International Development, to promote water-use efficiency in dozens of countries in the Middle East, Africa, Asia, and South America.

Of particular note is Dr. Hillel's work on the ground in countries in the Middle East, such as Egypt and Jordan, as well as in Palestinian communities. In carrying out these endeavors, his ability to speak Arabic aided him in building strong personal working relationships across political and ethnic boundaries. His efforts to bring micro-irrigation technology to Jordan were particularly fruitful in that they were done in conjunction with the programs under the direction of the then Crown Prince. He also worked extensively in Turkey, Pakistan, the Sudan, and many other countries. It is of special significance that Dr. Hillel's nomination for the World Food Prize contained letters of endorsement from individuals and organizations in Egypt, Jordan, and the United Arab Emirates.

He has also worked with the International Food Policy Research Institute and the International Development Research Center of Canada. He is currently a Senior Research Scientist at the Center for Climate Systems Research, part of the Earth Institute of Columbia University, and is working on the adaptation of agriculture to climate change in association with NASA/Goddard Institute for Space Studies.



*Dr. Daniel Hillel* 

## INSPIRING FUTURE GENERATIONS

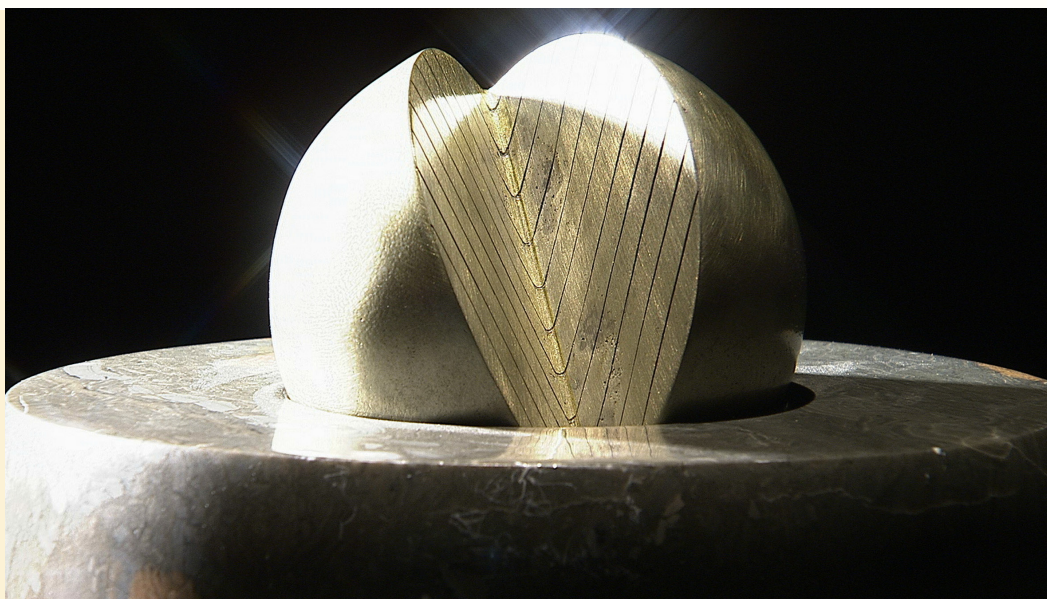
Along with his international field and development work, Dr. Hillel embarked on a career in academia as a researcher and professor at the Hebrew University in Jerusalem, the University of Massachusetts, Columbia University and other major research centers worldwide. He has written or edited over 20 books on soil and water science; his seminal textbooks have been translated into 12 languages. He has published more than 300 scientific papers, research reports, and practical manuals, and authored books for the general public on the vital role of soil and water in healthy agro-ecosystems.

Dr. Hillel has demonstrated the synergistic linkages across food production, water management, and soil science. His achievements have been and will continue to be essential to extending the Green Revolution and confronting the many global challenges in fighting hunger and poverty into the next century.



Dr. Daniel Hillel will be presented the \$250,000 World Food Prize on October 18 at the Iowa State Capitol in Des Moines.

The award will be given in conjunction with the 2012 Borlaug Dialogue, themed *Partnerships and Priorities: Transforming the Global Food Security Agenda*.



The World Food Prize was created by Dr. Norman E. Borlaug, recipient of the 1970 Nobel Peace Prize. Since 1986, The World Food Prize has honored outstanding individuals who have made vital contributions to improving the quality, quantity, or availability of food throughout the world. In 1990, when the original sponsor withdrew, Des Moines businessman and philanthropist John Ruan assumed sponsorship of The Prize and relocated The World Food Prize Foundation to Des Moines, Iowa, USA.

Previous Laureates have been recognized from Bangladesh, Brazil, China, Cuba, Denmark, Ethiopia, India, Mexico, Sierra Leone, Switzerland, the United Kingdom, the United Nations, and the United States.